THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 39 MAY, 1936 No. 2

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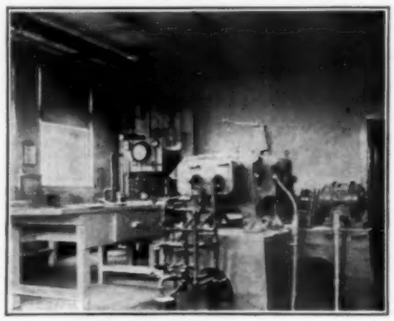

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Vol. 39 MAY, 1936 No. 2

DECENTRALIZATION:

—How Far Will It Go?
—A Threat to Labor?
—Promise to Clients?

WITHIN recent weeks much has appeared in daily newspapers and national magazines about the decentralization of the rubber industry. On all sides growing rumors indicate early action on the part of the larger manufacturers in Akron to move part of their production to other localities. Some of this is fact; some fiction. A review of the situation should help give a clearer picture and separate the fact from the fiction.

In discussing decentralization of rubber manufacturing activities two important factors should be kept in mind: one, that the recent labor agitation in Akron is not wholly responsible for current reports, but is merely serving to hasten the inevitable; and second, that decentralization has actually been taking place over a period of at least ten years.

With the exception of the United States Rubber Company, the major tire manufacturers are all located in and around Akron. There is actually little reason for the centralization of the rubber industry in Akron. It is not due to natural advantages offered by the city or its surrounding localities, but rather to one of those "industrial accidents" common to many industries. If Dr. Benjamin Franklin Goodrich had not started his little rubber manufacturing enterprise in Akron back in 1870 it is probable that the city would never have flourished as a rubber center.

But communities, when a specific reputation has been earned, act like magnets. For instance, the General Tire and Rubber Company was founded by William O'Neil and W. E. Fouse in Kansas City, Missouri. For several years it operated in that city with success. However, as Mr. O'Neil puts it, "Akron was home, so we returned thinking that while Akron labor was expensive it was worth what it cost."

Akron grew as a rubber center despite industrial difficulties. The city is situated at the summit of two watersheds, the Lake Erie and the Ohio River. The lack of adequate water power has been a constant source of anxiety on the part of the rubber manufacturers and has often been the point of bitter controversy between them and city authorities. Goodyear, in particular, has kept the water power situation before the municipal heads and at present is engaged in a court action brought to force action. Akron's water situation has long been a political issue.

Transportation facilities to Akron present another difficulty. It can readily be understood that crude rubber can be delivered on either coast at a lower price than to Akron. The same holds true for many of raw materials used in rubber factories.

South Receiving Much Consideration

For these reasons, among others, decentralization has slowly been taking place. In recent years Los Angeles has blossomed forth as a miniature rubber center and bids fair to become second only to Akron if expansion continues. Goodyear and Goodrich have large factories in that area, as have U. S. Rubber and Firestone. Branch factories have been set up by the leading manufacturers in other territories as well, attracted by adequate water supply, nearness to distant markets, and lower wage rates. The South, because of its proximity to cotton, has been receiving a good deal of consideration.

What definite decentralization will take place in the early future? It is on this point that current rumors are afloat. Here are the facts:

T. G. Graham, B. F. Goodrich Company vice-president, in an address delivered on March 31 to officers and committeemen of the Goodrich Twenty Year Service Club, the Ten Year Service Club and the Foremen's Club, stated that Goodrich "is making plans in our engineering department for a plant outside of Akron, in the East, where we can build tires and tubes. We are also making plans for a mechanical goods factory, outside of Akron and outside the State of Ohio." It is definitely known that a portion of the Philadelphia Rubber Works' reclaimed rubber plant at Oaks, Pennsylvania, a Goodrich subsidiary, is rapidly being equipped for the manufacture of tires and tubes. This is the Eastern plant referred to by Mr. Graham. The site of the proposed mechanical rubber goods plant will probably be in the South.

That General, too, was seeking a site for a mechanical goods plant was revealed by President O'Neil in a letter addressed to all employees on April 6. Referring to existing rumors that General was going to build an out-of-town plant, Mr. O'Neil wrote: "We do expect to build a mechanical goods plant elsewhere because we have found it impractical to make mechanical rubber goods in a high wage factory like an Akron plant. It is also true we are going to put a small tire department in the out-of-town plant." Again the site of the proposed factory will probably be in the South.

It is no secret that General has been seeking an auxiliary plant for some time, not only to provide another source of supply to meet customer's demands, but also for expansion purposes. Several years ago it was involved in negotiations to take over the Mogadore (Ohio) factory of the India Tire Company, but the deal fell through after being near completion. There is a slight possibility, in view of India Tire's present financial difficulties, that these past negotiations may be resumed.

While no official announcements of any kind have been forthcoming from Goodyear it is known that Goodyear is conducting a survey of sites for the erection of branch factories in the mid-West and Detroit. The same source of information reveals that production has been stepped up to near capacity at both the Los Angeles and Gadsden (Alabama) plants. According to unauthorized reports, tire production at Gadsden has been boosted from 6,000 to 8,000 per day, with preparations being made for the production of tubes at this plant for the first time, this production being scheduled to start on June 1.

Will Firestone Move to Detroit?

Reports have been current for months with regard to the construction of a mechanical rubber goods plant near Detroit by Firestone. With the exception of a few parts made by the Ford Motor Company in its Dearborn factories, Firestone supplies practically all rubber parts for Ford cars, as well as tires. Latest reports place the site of this mechanical rubber goods factory somewhere between Cleveland and Detroit, around Wyandotte.

Recent labor disturbances in rubber factories at Akron is, of course, an important element where de-

WILL FACTORIES SUCH AS THIS BE FORCED TO CURTAIL ACTIVITIES IN AKRON?

centralization is concerned. The high wage rate paid to rubber workers is the making of the manufacturers themselves. The high levels have been continued through the depression period with the result that Akron rubber workers are the highest paid industrial workers in the country. Employees in all industries including automotive, iron, steel, machinery, etc., in the month of October, 1935, according to the U. S. Bureau of Labor Statistics, averaged 56.4 cents an hour, while Akron rubber workers in the same month averaged between 85 and 90 cents an hour, with many hourly rates exceeding $1.

Because of this high wage level, Akron rubber manufacturers cannot compete on certain items with outside rubber companies with a much lower average wage level. For instance, General figures that in 1935 it spent $800,000 more for Akron labor than the same labor would have cost in some other communities.

Second Source of Supply Essential

One of the most important reasons for decentralization of the rubber industry is the necessity of having more than one source of supply. This does not apply only to the "big fellows" but also to many of the smaller factories where a labor disturbance completely ties up production. If the Goodyear plants at Akron can be completely paralyzed, as they were during the recent strike, what chance would a smaller company have in a similar situation?

It is undoubtedly a fact that rubber manufacturers with only one source of supply often lose out on certain types of business they might otherwise procure. Can we blame the manufacturer of an article who utilizes some rubber part for thinking twice before placing his order with a factory that may not be able to fill his requirements in the event of a strike? Or an automobile manufacturer from thinking three times before placing his tire contract?

Vice-President Graham, of Goodrich, blames the recent labor disturbances for having cost the company business. Although only Goodyear was involved, Graham points out that "our customers became scared of Akron . . . loose talk and nasty rumors made large buyers fear that it was not safe to place their business in Akron, so they placed it where there was no threat of labor trouble."

Mr. O'Neil claims that if it were not for the strike at General last year the plant would be "making 2,000 tires a day more this year than it will make." With regard to a single source of supply, he recently advised employees, that "we have a patented tire here which we cannot sell to a car manufacturer because he won't deal with a company that has only one source of supply for a patented article he can't get elsewhere."

The Reaction of One Manufacturer

In discussing this decentralization move in a recent newspaper column, B. C. Forbes, noted economist, gives the reaction of an Akron rubber manufacturer, who is quoted as follows:

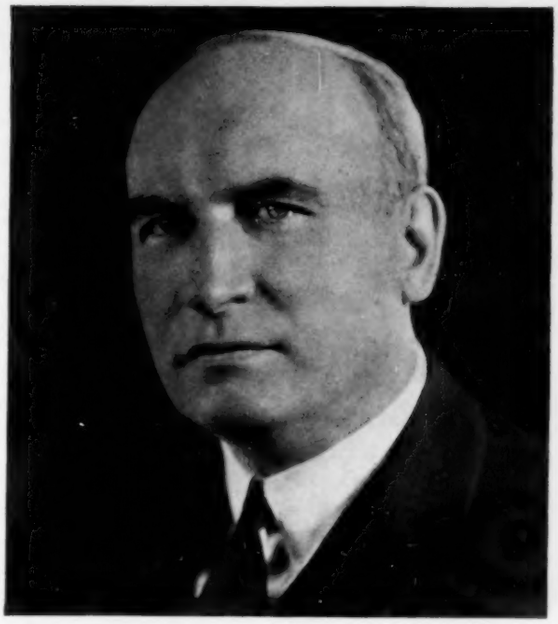
"I don't want to continue having all my eggs in the Akron basket. I want to be able to continue at least partial production should labor agitators stop everything at Akron. This will provide better protection for our dealers and our customers.

"Skilled tire makers can earn $1.40 an hour. We don't mind paying this high wage to them because they are highly efficient and work fast. But we cannot afford to pay similar wages to other classes of labor, who don't have to work so fast and whose operations don't require such skill.

"I figure that by locating a plant in another center, a strategic center from a marketing point of view, we can save freight charges to some very important markets, that we can thus institute insurance against complete stoppage of operations should labor agitators again become rambunctious, and that we will be able to find workers eager to work for the wages we will pay.

There are reasons for decentralization of the rubber industry other than those cited in the above paragraphs, including the fear of the manufacturers that concerted action on the part of union workers in Akron factories will cause the slowing down of production because of objection to the so-termed speed-up system.

But in any event it should be evident that decentralization is a necessary step for the rubber industry. In the same manner that Pittsburgh lost its title as the "steel center of America" Akron, too, will some day lose its prominence as the "rubber manufacturing center of the world." Decentralization will not interfere with the progress or development of the industry, it is merely an industrial necessity which must and will be taken in stride.



"Stop the Yappers", says O'Neil

In a letter addressed to employees recently, William O'Neil, President of General, credits labor disturbances to "yappers" and effectively points out how these disgruntled individuals cost other employees good money. As O'Neil put it: "No one has to join anything and nobody has to pay dues to anybody to hold his job with us. . . . No one will be fired if he joins a union or pays dues to one. We aren't concerned with what you do with your money. That's your money. But we are concerned when 'yappers' hurt our business. And you should be concerned because that hurts you—cuts your hours, cuts your pay. You have a stake in this business which you ought to protect. 'Yappers' only seek to destroy it."

Time and Motion Study For Job Order Shops

By Lee D. Tidball

Manager, Time Study and Standards, Miller Rubber Division, B. F. Goodrich Co.

THERE are various methods of effecting reductions in overhead and waste costs, which have no connection with either time or motion study. Unfortunately these methods, in most cases, have been given an intensive application during the past years of depression, and have exhausted a big share of their possibilities, leaving as the only resource a field which the average job plant has avoided as expensive, impractical, and even dangerous.

This avoidance only serves to illustrate the lack of observance up to the present of a cardinal rule of time and motion study: Be open minded and receptive to change regardless of how exaggerated the idea may seem. This does not mean, "adopt all ideas," but does mean to conscientiously investigate them and to refuse to accept as a reason for anything the statements, "We always have," or "It cannot be done."

You may doubt that time and motion study in your case would be practical. The preparation and conduct of your time and motion study service need not be a complicated and expensive matter. On the contrary, just like any other service, necessary and common to both the big and the little industry—such as timekeeping and payroll, shippers and bookkeeping—it is flexible and can be used as the particular problem necessitates. The principles of both time and motion study can be profitably used in any industry large or small.

In presenting this problem there are several important facts to bring out. *First*: The whole subject of application of time and motion study to a job shop isn't nearly as difficult as some may have thought.

Second: It can be done by breaking the work necessary to complete any job into small elements of time, and the gathering of these elemental times into such shape that they may be quickly put together into any combination desired and a total obtained. All of the different variable factors that affect the time required to complete a piece of work can be located and measured. Many of these will vary from the same causes and can be measured at the same time. Others will not vary and are constant.

Third: Possession of the information acquired on these elemental operations is valuable for (1) Use for wage incentive payment. (2) Determination of current costs accurately. (3) Accurate prediction of costs on prospective new business. (4) As a result of the first three items, higher wages, lower costs, more volume and better competitive position. Due to the fact that costs on new business sought are known in advance, better selling is possible.

No successful plant can operate without knowing the cost of their product and their machine capacities. We must know the present facts before we can intelligently work on plans of betterment, if for no other reason than to be sure we put our efforts in the places where the chances for a return are the best. Note that any accurate knowledge of costs and machine capacities requires time study. This does not mean necessarily that a stop watch is required. There are many other methods of taking a time study such as the past average, production meters, etc., but the analogy follows all through your business conduct—you are using at least some simple brand of time study if you have at present any picture of operating costs and capacities. The only question for you to decide is: Can this be refined and better use made of it?

A general definition of time study is, "The measurement of time required." To make this an exact definition in application to the establishment of task times it must read: "The determination of the exact times and efforts required to accomplish a motion or series of motions either in conjunction with or separate from mechanical devices, plus a description of these groups in so accurate a detail that the various parts of the total job times may be recognized wherever or whenever they occur and thus permit identical times to be used for identical motions or motion groups; this also includes determination of machine times."

A general, and at the same time the most exact, definition of motion study that we can give is, "The observation of an occurrence to see how it is done."

This article is abstracted from a paper delivered at a recent meeting of the American Management Association, at Cleveland.

Can YOU Apply Time and Motion Study?

MANY rubber manufacturers are under the erroneous impression that time and motion study are applicable only to mass production methods. While it is a fact that the larger manufacturers are utilizing the advantages to be gained by time and motion study and profiting thereby, it is also a fact that the cardinal rules pertaining to mass production may equally be applied to plants working on a smaller scale irrespective of the number of employees engaged. In this article the author makes clear the importance of time and motion study when applied to job order shops where non-repetitive work is the order of the day. A clearer understanding of time and motion study will enable many manufacturers to quote prices on individual lots more in keeping with the particular problem involved. This article is a distinct step in that direction.

Obviously the requirements of the time study definition cannot be followed without carrying out that single requirement of motion study. One says *how* and the other says *how long*. They must be used together.

That makes a fine sounding set of definitions, but it doesn't make any clearer the application of time study to a job shop where you say there is a very small amount of repetition. Let this statement then serve as a starter to clear the way: "As far as human effort is concerned there is no such thing as non-repetitive work. Any series of human motions can be split into less than 20 repetitive moves." The printing of the English alphabet as ordinarily employed by engineers for example, is 66 repetitions of 7 basic moves.

With this fact in mind the experienced industrial engineer makes his time study approach to a shop engaged in what we think of as being non-repetitive work in a manner somewhat the reverse of that in mass production plants. Being constantly on the lookout for single and group motion repetitions, he is able by a preliminary survey to make a tentative classification of most of the constant and variable factors to be timed and perhaps even the range of time to be covered. The accomplishment of this reduces the necessary volume of time study work in a great degree, the usual procedure being to take a large number of studies and then segregate and classify the information gathered. A large portion of this material turns out to duplicate itself and is thrown aside.

He now proceeds with the development of standard times on motions and groups, on machine capacities etc., but he must at this point determine whether to use or not use an incentive method of payment. If the former is decided upon, the type or system of payment, the exact type of standard setting procedure, the kind and location of tally points must be settled to fit the individual case. In the event an incentive wage payment is desirable, there are a few important rules to consider in all cases, some of which follow herewith:

1. The possible as well as the necessary, limits of accuracy must be determined. This affects the type of incentive to be used. It may be profitable to use no incentive except the posting of records based on production measured by approximate standards.
2. Sufficient wage increase on incentive work over day work to overcome the natural opposition of habitual day workers.
3. Well trained and honest standard setters must be provided.
4. Adequate tally checks planned.
5. Adequate and systematic records after installation. These in the end will greatly reduce the labor of standard setting.
6. The gang leaders, foremen and others in direct charge of production must not only be well-trained in the operation of the incentive system but well sold.
7. Management must provide complete co-operation and support—open mindedly.
8. Standards must be set whenever possible before the job goes to the worker.
9. The location of the standard setter's work center depends on circumstances but as close as possible to the actual work, where the least possible opportunity for personal contact with employees is presented has seemed the best plan in actual practice—the foreman's office for example.
10. The last rule is one entirely for management. It is this: Both time and motion study can show results in any business but the exact limits of accuracy and refinement, the decision as to payment methods, the operating expense that can be justified, depend on the nature of the business, the types of labor, the degree of mechanization and the geographical location, and must be well considered in their application to any particular case.

In case the choice is made in favor of some type of incentive wage payment plan the following things

Curing Water Bottles

Illustration shows operator about to remove cured bottles from the mold. Cores are hung on the hooks (to the right) and bottles stripped from the cores. Operator works two presses and during the machine process time has ample time to cut, fold and place uncured stock in the cavities, cleanse core, shut and return mold to press. This equipment was laid out after extensive time and motion studies and the operation sequences and working space layout designed for maximum efficiency.

will assist in deciding the exact form. The choice must (1) Be recognized as fair by the workers. (2) It must adequately measure and reward both services rendered and effort expended. (3) It must be easily computed into daily wages. (4) It must be easily administered from the time study angle. (5) It must lend itself to ready interpretation into management's control data.

Fractional Bonus Plan Recommended

In cases where exact standards cannot be economically set, or where standard conditions cannot be established, and the use of an incentive still seems desirable—due perhaps to the established presence of high labor unit costs at periods of low production or for any other reason, a fractional bonus plan using more approximate standard times will often operate satisfactorily. A fractional bonus plan is one which pays a fixed day rate plus a premium for performance to a set standard. Usually the day rate is 2/3 of average total compensation—for example, with $.75 per hour total payment desired, the worker is paid $.50 per hour and earns the $.25 additional on piece work, if desired, or on efficiency calculated by dividing standard time by actual time. The advantage of this type of payment is that an over or under error in standard calculation of 15% only makes 5% over or under fluctuation in wage. Of course the disadvantage is that the incentive offered is not as great.

While some variations in the methods of application might be required in different situations, a type that rewards for time *and* effort expended is superior to those that pay for services rendered only, because such a method gives a fair basis for comparison of labor efficiencies of workers on widely varying types of work and lends itself to a tie-up of operating costs for management control very readily.

Using the general approach previously outlined, total standard job times can be preset on non-repetitive work by the use of elemental standard times developed from time studies. This can be done in a variety of ways, most accurately by breaking the non-repetitive work into small parts which in most cases can then be identified as repetition of work on which standard times are available. Empirical formulae can often be developed to eliminate the process of breakdown or shorten it considerably. The important requirements are first to have a standard setter well enough trained to be able to visualize all the parts of the total job and work motions required on each part and second to provide him with times to use in building up the whole. To serve as illustrations of this breakdown:

In case of a turning lathe job, the setup and chuck change, if any, the obtaining of tools and material, the tool setting and dressing, the speed and feed of cuts, the reset of tools, the calipering, etc., must be as clear in the mind of the standard setter as in that of the worker.

In the case of an electrician installing an oil starter and small motor the entire process and the bill of material must be known to the standard setter. Knowing exactly what must be done with each item of this material the standard setter is able to apply his preset times for cutting, bending, splicing, tapping, drilling, etc., and arrive at a correct job time.

The question often arises as to how allowance is made for the worker's lack of experience on individual jobs in the small shop. The inexperienced worker's slowness is due to only two things: first, lack of trade skill or unfamiliarity with his tools. Where work is of the same general type, this is not true of job shop workers. The second cause, lack of knowledge on the part of the worker as to exact methods or exact motion paths. These must be preplanned by the supervisor. When necessary such allowances are made in a variety of ways, as follows:

(1) By job constants or starting or change times. (2) Varying times for different lot sizes—not in direct proportion to quantities. (3) Instruction sheets or individual instructions to pre-planned methods. (4) Use of straight standards with a bonus method of wage calculation. (5) Learners' scales. (6) Looser standard times at straight piece work payment.

It is often stated that day work and piece work together are unworkable. This is true only when no accurate measure of the day work can be obtained, which is usually not the case. Nothing is more detrimental to a wage incentive system than inaccuracy or dishonesty on the part of workers or management. For this reason written policies in regard to the method of payment and time paid for on daywork jobs should be established. For the same reason, inaccurate standards regardless of whether too high or too low are detrimental and when conditions come up that are not covered by existing time studied values, it is seldom advisable to set approximate or empirical arbitrary rates. A clear pre-understanding of payment for this type of work should be had. A fair type of payment often used is a variable day rate based on efficiency of the employee on regular work. It is general experience that day work cannot be eliminated entirely even in mass production, so that this problem is bound to arise in the job shop even more often and should be disposed of in advance.

The feeling of doubt regarding the use of time study is partly due to a feeling that the cost of operation might exceed the savings. This could easily be true. It must be repeated that some time study is necessary, the degree depends on circumstances. An accurate preliminary survey and an accurate record of results attained, at least during the first year of operation, are indispensable.

In a plant employing only 10 workers, would it not be more desirable as well as more profitable to have 6 workers at higher wages plus one time study man than 10 workers at lower wages? Even assuming that no profit or loss occurs between these two choices on the direct cost, would not the possession of information resulting in accurate costs both on current work and on prospective new work be worth while? In addition the knowledge of detail times will often result in savings merely through *directing attention* to certain parts of jobs not previously known to be important.

Standard Setting Can be Simplified

Finally, by the use of prepared tables, slide rules and formulae as short cuts, the work of standard setting can be greatly reduced. One man can often keep 100 or more workers on non-repetitive jobs supplied with standards. In case the number of direct workers is few, you will find the standard setter, a trained analyst and shopman, a far easier type to use on other functions as a fill-in, than the ordinary shop or clerical worker.

So far we have said little of motion study except to define it and show that all time study must include motion study. Some may feel that motion study is a job solely for the time study man or trained observer. While this is true in some cases, the laws of

Packing Syringes

This illustrates a two-handed assembly sequence involving multiple operations. Rearrangement of working space after motion study resulted in 300% more production per unit of floor space, a small increase in operator's production and considerable reduction in fatigue. The eight parts of this assembly are handled in four simultaneous motions with each hand.

motion study are so simple and easily learned that there is no doubt that in the small shop the greatest benefit will come from having the man in immediate contact with the job, supervisor or foreman, familiar with motion study. In many cases, small lots are completed before anyone else can get to them. In orders where complete specifications are not issued but prices pre-determined, as well as in new product design and manufacture, the design and routing must be done to meet a fixed cost and these functions usually fall on the foreman. Motion study principles are invaluable aids to him in carrying out such orders.

A motion study on an individual job is the same thing as in mass production units on a smaller scale and the parts represented in mass production by the various machines and other operations are paralleled on the smaller job by the right hand, left hand, eyes, body and legs of the operator. In the case of group workers, each worker of a pair may be considered as an arm or body part of a single worker. We all know it is advantageous to have our workers using both hands productively. It is just as reasonable to have work balanced productively between two workers to eliminate delays.

One of the best uses for motion study in non-repetitive work is to observe the types of losses or errors that occur and train workers to eliminate them. For example, maintenance crews can be taught to carry certain often used types of material with them. It is often advisable to construct portable tool cribs and benches. Mass production whose product changes from year to year has taken a lesson from the maintenance crews and created flexibility in the layouts of machinery that should be the envy of any job shop in which it is usually even more desirable, but very seldom found.

In considering the profit returns from time study a 25% net is excellent after completion of incentive plan over day work. We have examined the process required. In looking at the possible returns from motion study, the 40 and 50% items are not at all uncommon. When we consider that items like these are brought up by foremen and supervisors and that the training period required is not over one week it is obviously a good field of endeavor.

The course of training boils down to the teaching, memorizing and application of 12 rules. The application of these rules grows easier with each successive use. In addition to this the student must learn to see that at which he looks. Knowledge of the rules and a few demonstrations usually suffice. The observer is taught to separate jobs into four major groups which universally are *Get, Do, Aside* and *Delays* with still smaller subdivisions of work performed by single body members. If you will recall our definitions, this split into elements is one of the basic facts of time study. Thus it is readily apparent that this training in simple motion study can easily be worked in as a part of the education and selling of the foreman previously decided as being necessary before a wage incentive installation.

If the choice were mine, a job shop would have a man trained first in time study, second in the actual line of manufacture and third in motion study, but I would expect the greatest savings in the third group from supervisors and foremen trained by him. Motion study returns are, however, often hard to collect without a labor cost control such as incentive or measured day work.

The use of both time and motion study in some degree in any rubber plant is an established fact. Their possible use as a basis for wage incentive, cost reduction and operating budget control are our main items of interest and our greatest concern is the relative operating cost vs. profit returnable. We should consider as assets the money to be saved by use of the information acquired as well as business gained or retained by lowered costs. If against this we balance the first cost of installation considered as capital investment, and the continued operation as current overhead expense the answer for each particular case is obtained.

I Have Seen Goodyear's "Gum Elastic"

By P. W. Barker

The decision of the author to inspect the available copies in Washington of Goodyear's "Gum Elastic" was prompted by the action of the *India Rubber Journal* in starting to reprint the book in installments beginning with its April 11, 1936, issue. This step was taken by our British contemporary because it was felt that the historic book was too little known and that so few quotations or even references to ideas or passages in it were found in modern rubber technical literature. It is hoped that the accompanying article (and others to follow on Goodyear) will serve to rekindle interest in the works of that hardy pioneer. Incidentally, the 100th anniversary of Goodyear's discovery of vulcanization will be celebrated in 1939. —Editor.

Charles Goodyear

From a painting by J. P. A. Healy in 1854, now in the possession of the United States Rubber Co.

REPRODUCTION of facsimile pages of Charles Goodyear's historic volume, "Gum-Elastic," in the *India-Rubber Journal,* was accompanied with the statement that probably not a single copy of the first edition, that of 1853, was in all England. Our British colleague need not apologize for this omission or poverty, for there are few copies of the 1853 edition in the United States.

One copy is in the Rare Book Collection in the Library of Congress, at Washington, D. C., and I have seen it. It is entirely printed on paper, both text and plates, and it is dated 1853. References to the number of the plate and page in the text are left blank.

On inspection it is doubtful that even the minutest particle of rubber cement was used in its binding, despite the statements to the contrary in the Preface and Introduction. The condition of this copy is rather fragile, and the text to Vol. II begins with page 21 and two or three pages of the index also are missing. Both volumes are bound under the same green covers.

Examination of this rare 1853 edition was very enlightening, but there was the dissatisfaction of not finding rubber used in its construction. So another copy of "Gum-Elastic" was sought and found in the Arts and Industries Building of the Smithsonian Institution (named after its British founder, James Smithson), at Washington, the repository of an immense collection of Americana, including Lindbergh's "Spirit of St. Louis."

And Goodyear's book printed entirely and bound entirely on rubberized sheets is under the same roof as Lindbergh's plane. It is locked in a glass topped case with other precious Goodyear memorabilia, some of which will be the subject of further short articles on Charles Goodyear to appear in this journal.

I just had to see it! Not only see it, but touch it! The curator in charge of the rubber exhibit was kind enough to open the glass case and to allow me to examine this rare rubber book, even though in doing so the museum guards were called by the electric-alarm apparatus.

Not only guards were called by the bells watching over Goodyear's treasure, but a number of bewildered and curious tourists. In this exciting atmosphere, I examined Charles Goodyear's "Gum-Elastic and Its Varieties, with a Detailed Account of Its Applications and Uses, and the Discovery of Vulcanization."

It was reddish brown in color, with a beautifully carved hard rubber front cover and a metal back cover. Its weight was about two or three times as great as the paper copy I had seen in the Library of Congress but it was perhaps only slightly thicker. A printed statement inside its front cover, a small slip of paper, perhaps the only paper in the entire book, was to the effect that this printing was not the regular edition but a presentation copy. And its date, 1855, a disappointment, two years after the first edition.

Nor were plate and page numbers given in the text, blanks being left for them. The book opened only in about six places with ease, other pages appearing to be stuck together; however, it was far from being a melted solid block of rubber. A rubber technician or an expert bibliophile probably could separate all the pages, if there were need for such an intimate examination. Would a modern rubber book last so long? Could modern rubber manufacturers do so good; print a book of over 600 pages on rubberized fabric to withstand the 81 years from 1855 or the 81 years from today to 2017?

A Klepper folding kayak on the Ohio River.

Use of Rubber in Inflated and Folding Boats

THERE are a number of inflatable and folding boats on the market especially designed for sportsmen and pleasure seekers. The folding boats are generally of either wood or canvas, the latter usually consisting of a rubberized duck. The inflatable models, without exception, utilize rubber in several parts of their construction.

Both types of boats are made in styles for propelling by means of oars, paddles, sails, and outboard motors. Canoes and rowboats are available in the folding boat type, these models ranging in weight from 28 to 120 pounds and in price from $19.90 to approximately $150. The framework of the folding boat is usually of ash or plywood. Inflatable models utilize air chambers in some instances, and are generally made of rubberized canvas.

One inflatable model, termed Inflatex, referred to as "the boat with the inner tubes," made by Air Cruisers, Inc., Clifton, N. J., has an arrangement of inner tubes within an outer casing, an arrangement similar in principle to an automobile tire or a football. The outer casings are hand tailored to shape, exactly identical with the tubes, so that the tubes, when inflated, are under no strain, merely containing air under pressure.

The casings on Inflatex models are double-sewed on a ¼-inch gauge machine, with stitches of the continuous interlocking type, as per Federal specifications. They are lined with rubber to protect the tubes from the rays of the sun. The inner tubes are thicker than the average automobile tube, and are equipped with Schrader valves. The tubes, of course, may be readily removed and patched if necessary.

Made in three sizes, for 1, 2 and 4 passengers, each Inflatex model makes use of two tubes independently inflated and deflated. The 1-man model weighs only 15 pounds, and has a buoyancy of 700 pounds. Deflated, this model fits into a 12 by 14-inch carrying case, having a 6-foot 9-inch length when inflated and a 3-foot width. All models are equipped with flexible fibre reinforced oarlocks, with brass rings crimped in so they will not pull out in use. The company supplies cylinders of liquid CO_2 for automatic inflation of Inflatex models, although ordinary air pumps are suitable.

Under the name of the Airubber Pak-Boat, the American Pad and Textile Company, Greenfield, Ohio, features a 3-man inflatable boat which incorporates several exclusive features in its construction. This model, pneumatic in principle, has a raised and pointed bow and stern which is said to give it the advantage of easy control and safe handling in rough and choppy waters. There are two separate air chambers, each 15 inches in capacity. The seats of the Pak-Boat are also inflated, and are integral with the side pontoons but have no air connection with them.

These Airubber models are made from specially woven fabric having a breaking strength of 100 pounds per inch. The fabric is coated on the inside with a 1/16th inch thickness of rubber calendered to the fabric. The bottom is frictioned and rubberized

There are no sewed seams in the rubberized fabric of the Goodyear boats, all seams being joined by a waterproof cement.

Above: Pontoons sealed by pressure molding and inflating seats are two features that mark the Airubber Pak-Boats.

Left: Stem and stern of the Folbot models are rubberized together with the hull, thus securing watertightness.

duck, and is snagproof. Outside each air chamber seam a reinforcing strip is cemented on to insure waterproofness; the oarlocks and bottoms are attached afterwards by a special waterproofing cementing process. The Pak-Boat is claimed to be the only inflated boat made with pontoons sealed by pressure molding, as well as the only boat of any kind made with inflatable seats.

According to the American Pad and Textile Company, high air pressure is not required for the pontoons of these models, one pound of pressure being ample to remove the wrinkles and to hold the shape. With each model a brass pump for inflating purposes is supplied. In addition to inflating the pontoons, the seat, too, must be inflated, a matter of seconds according to the company.

Deflated and bagged, the Airubber Pak-Boat (the 3-man size) weighs 37 pounds including all equipment. With each boat a pair of 4¾ feet take-a-part oars, a pump, life-line and pack-bag are supplied. The life-line is strung all around the boat for convenience of the user when diving off and climbing back in the boat. These Pak-Boats are adapted for use with outboard motors if desired.

Originally designed and built for use by the U. S. Navy, the Goodyear Tire and Rubber Company, Akron, also features a line of commercial inflatable boats, in one, two, four and seven-man capacities. These models are all made completely of rubberized fabric, and have pointed and raised bows, tapering bodies, fabric oarlocks and reinforced fabric seats. There are no sewed seams in the rubberized fabric, all seams being joined with a waterproof cement originally developed especially for airship and balloon envelopes.

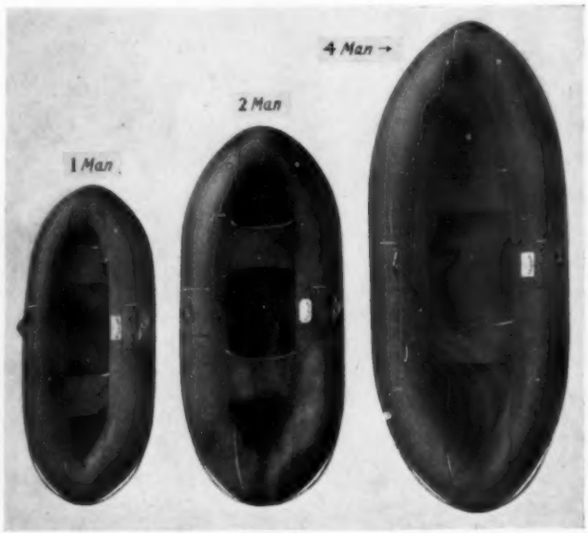
All Goodyear inflatable boat models have bodies divided into two compartments, or air chambers, either of which is air-tight and buoyant, and capable of supporting the occupants. The one-man models are approximately 6 feet long and 3 feet wide. They have a single fabric seat placed in a position similar to that found in the ordinary row-boat, other models having two seats. Each boat is equipped with a manila life-line and comes packed in a small cylindrical carrying case. Prices on Goodyear inflatable boats include the carrying case, sectional oars and a large volume air pump.

Canoes and kayaks are the two most popular styles in the folding boat types, although row-boat models are also being merchandised. Rubber is used in several different applications on these types of boats, with rubberized fabrics playing the major role. Separate air chambers, for buoyancy purposes, are also frequently used as standard equipment with folding boats, although not integral parts of the construction.

Folding boats under the trade name of Kalamazoo, manufactured by the Kalamazoo Canvas Boat Company, of Kalamazoo, Michigan, are made with frames of galvanized steel, the sterns and other parts being of selected wood, well bolted and riveted. Rubber air chambers are standard equipment on all of these models. As optional equipment, the company furnishes air tubes which are easily attached to the sides of the boats and steady them when used in rough waters or when sails are utilized. All Kalmazoo folding boats are adapted for oars, sails or outboard motors. The rubber air tubes are 6, 10 and 12 feet in length. Three air chambers are usually supplied with each model.

The Klepper Portable Folding Kayaks featured by the Hofinger Folding Kayak Company, of Chicago, have frameworks of well-seasoned ash covered with a special covering called "Walrushide." This covering, said to be 3 to 5 times as tough as ordinary coated canvas coverings used on small craft, consists of several plys of tear-proof canvas between layers of special rubber compositions made inseparable by

(Continued on page 97)



These Inflatex models, made by Air Cruisers, Inc., feature a special arrangement of inner tubes within outer casings.

Studies on the Acetone Extraction of Raw Rubber

By Hidemaro Endoh

Dunlop Rubber (Far East) Company, Kobe, Japan

IN THE December, 1935, issue of THE RUBBER AGE, we presented the results of the author's studies on the acetone extraction of raw rubber as affected by heat and age which were abstracted from his original papers published in the August and September, 1935, issues of the *Journal of the Society of the Rubber Industry of Japan*. The result of further tests, the fifth to date, appears herewith, abstracted from the original paper in the December, 1935, issue of the same journal.—EDITOR.

V. The Influence of Heating at 100° C. and Storing the Acetone Extract on the Saponification Value.

The influence of heating the acetone extract at 100° C. and of storage on its saponification value were studied.

(A) THE RELATION BETWEEN THE TIME OF HEATING THE ACETONE EXTRACT AT 100° C. AND THE SAPONIFICATION VALUE.

Acetone extract was obtained as previously mentioned. Taking the results obtained in the previous paper into consideration, drying was carried out for as short a time as possible, usually for 3 minutes. After the flask was cooled and weighed, it was then heated in a steam bath for 0, 15, 30 and 60 minutes respectively and the saponification value was determined.

(a) ACETONE EXTRACT FROM 8 HOURS CONTINUOUS EXTRACTION.

Sample 8.1283 g (5 sheets)

Acetone extract (g) A_0	0.0564	0.0522	0.0572	0.0508
Acetone extract (%)	3.47	3.21	3.51	0.13
Time of heating (m)	0	15	30	60
Acetone extract after heating (g) A_T	0.0564	0.0576	0.0576	0.0576
Acetone extract after heating (%)	3.47	3.54	3.54	3.54
N/10 HCl (cc)	1.3	1.35	1.4	1.35
Saponification value (A)	129.0	144.8	137.1	148.8
Saponification value (AT)	129.0	131.3	136.1	131.2
A_T/A_0 (%)	100.0	110.2	110.8	113.2
Saponification value (R)	4.48	4.65	4.82	4.65

In the above table the saponification value relative to the acetone extract after heating is expressed as saponification value (AT).

(b) ACETONE EXTRACT FROM 16 HOURS CONTINUOUS EXTRACTION.

Sample 7.5955 g (5 sheets)

Acetone extract (g) A_0	0.0482	0.0452	0.0499	0.0454
Acetone extract (%)	3.17	2.98	3.29	3.00
Time of heating (m)	0	15	30	60
Acetone extract after heating (g) A_T	0.0482	0.0494	0.0468	0.0482
Acetone extract after heating (%)	3.17	3.26	3.08	3.15
N/10 HCl (cc)	1.5	1.5	1.5	1.5
Saponification value (A)	174.3	185.9	168.6	185.0
Saponification value (AT)	174.3	170.0	179.5	174.5
A_T/A_0 (%)	100.0	109.2	93.7	106.2
Saponification value (R)	5.54	5.54	5.54	5.54

(c) ACETONE EXTRACT FROM 24 HOURS CONTINUOUS EXTRACTION.

Sample 9.8924 g (5 sheets)

Acetone extract (g) A_0	0.0710	0.0731	0.0720	0.0662
Acetone extract (%)	3.59	3.70	3.64	3.35
Time of heating (m)	0	15	30	60
Acetone extract after (g) A_T	0.0710	0.0746	0.0710	0.0668
Acetone extract after heating (%)	3.59	3.73	3.60	3.38
N/10 HCl (cc)	1.75	1.7	1.7	1.65
Saponification value (A)	138.0	130.2	132.2	139.6
Saponification value (AT)	138.0	127.7	133.7	138.3
A_T/A_0 (%)	100.0	102.1	98.9	101.0
Saponification value (R)	4.96	4.82	4.82	4.68

(B) THE RELATION BETWEEN THE TIME OF STORING THE ACETONE EXTRACT AND THE SAPONIFICATION VALUE.

(a) STORING THE ACETONE EXTRACT IN A DESICCATOR.

Acetone extract from pale crêpe (8 hours continuous extraction) was put in a $CaCl_2$-filled desiccator. The saponification value was determined after storing for 1, 2 and 3 days (not in dark room).

Sample 8.4540 g (5 sheets)

Acetone extract (g) A_0	0.0603	0.0602	0.0590	0.0640
Acetone extract (%)	3.57	3.67	3.49	3.79
Days extract stored	0	1	3	5
Acetone extract after storing (g) A_T	0.0603	0.0594	0.0630	0.0590
Acetone extract after storing (%)	3.57	3.52	3.73	3.49
N/10 HCl (cc)	1.4	1.5	1.45	1.5
Saponification value (A)	130.0	135.5	137.6	131.2
Saponification value (AT)	130.0	141.5	128.9	142.4
A_T/A_0 (%)	100.0	95.8	106.9	92.1
Saponification value (R)	4.64	4.97	4.80	4.97

(b) THE RELATION BETWEEN STORAGE OF AN ACETONE SOLUTION OF THE ACETONE EXTRACT AND THE SAPONIFICATION VALUE.

Acetone extract from 8 hours continuous extraction was used. Four stoppered flasks, each containing 50 cc of an acetone solution of acetone extract, were stored in a dark place at room temperature. After the required length of time the flasks were taken out, the acetone evaporated, and the flasks dried and weighed, after which the saponification value was determined.

Sample 8.5528 g (5 sheets)

Acetone extract (g) A_0	0.0604	—	—	—
Acetone extract (%)	3.53	—	—	—
Days extract stored	0	1	3	5
Acetone extract after storing (g) A_T	0.0604	0.0599	0.0650	0.0650
Acetone extract after storing (%)	3.53	3.51	3.80	3.80

$N/10$ HCl (cc)	1.55	1.65	1.45	1.5
Saponification value (A)	143.7	153.0	134.5	139.2
Saponification value (AT)	143.7	154.3	124.9	129.1
A_T/A_o (%)	100.0	99.2	107.8	107.8
Saponification value (R)	5.08	5.41	4.75	4.92

Summary of Results

(1) When the acetone extract was heated at 100° C. the saponification value (AT) first decreased and then increased.

(2) When the acetone extract was stored, the saponification value (AT) first increased and then decreased and returned to the original value.

(3) The determination of saponification value is summarized as follows:—the sample is taken and extracted for the required length of time. After completion of the extraction, the acetone is evaporated off as soon as possible and the flask dried in a steam bath for as short a time as possible. The drying time must not be over 15 minutes and usually 5 minutes is sufficient. The dried flask is cooled and weighed, after which 20 cc of $N/5$ alcoholic KOH is added and the flask heated on a water bath for 60 minutes. The excess alkali is titrated with $N/10$ HCl solution, using phenolphthalein as indicator.

Rubber in the 1936 Ford

OF the more than 15,000 parts which go to make up the 1936 Ford V-8, approximately 160 are made of rubber. The list discloses 92 distinct rubber parts required in the car's assembly, multiples of many of these, such as grommets, bushings, etc., bringing the total up to 160. The Fordor touring sedan, as an example, uses 103.8 pounds of rubber of which approximately half represents the five tires. Other important rubber parts include the two front and rear engine mountings, the four radiator hose connections, front and rear axle bumpers, floor

Some of the 92 rubber parts in the 1936 Ford V-8

board transmission seal, pedal pads and accelerator treadle pad, radius rod bushings, brake rod supports, fan belt, windshield weather strip, pedal seals, bumper and rear lamp pads and steering column bushing. Gaskets, grommets, anti-squeak strips and door bumpers are a few other rubber parts in the new Ford V-8.

Testing Rubber by Fluorescence

RAPID progress is reported in the testing of materials by what has become known as the "Fluorescence Analysis" method. This method makes use of the fact that ultra-violet light, which is invisible, when falling on certain substances, causes them to glow, or "fluoresce," the color of the fluorescence often being indicative of the purity of the substance involved, and the extent of its contamination may be judged by the intensity of the light emitted.

Discussing the testing of rubber by fluorescence in the February 13th, 1936, issue of *The Electrical Times* (London), J. A. Radley states that with rubber the rapid and qualitative testing of the various substances added to the mix may be carried out, the amount of these may be estimated from a comparison with mixes containing known quantities and, finally, changes in the rubber may be followed systematically, such as aging, deterioration, etc. According to Mr. Radley, normal latex gives a light purple color, while Revertex and Vultex show a bright white and a greenish-white fluorescence, respectively. Casein shows a bright yellow and Dextrin a bright brown.

Among the accelerators, Vulkacit-CA shows a weak yellow whereas Vulkacit-D and -1000 show reddish violet and strong bluish violet colors. The fluorescence of any one accelerator may vary from one mix to another of different proportions, but it is generally characteristic and unaffected by the presence of other ingredients in the mix, such as sulfur, etc.

It has been reported (Cotton) that an increase in the tensile strength of rubber is followed by an increase in the intensity of its fluorescence and suggests the test for the routine examination of rubber. Certain antioxidants are known to give a characteristic fluorescence. Age-rite, for example, has a bluish green color which is transformed into a violet in a benzol solution.

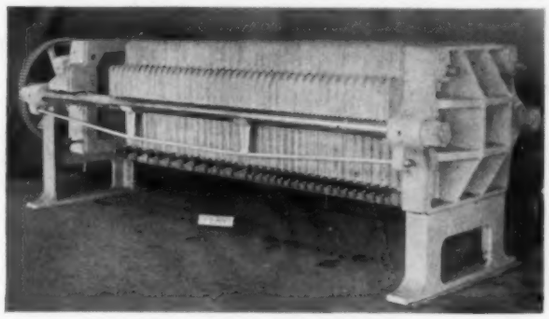
In the case of lithopones, the fluorescence test has proved of particular value. A rough gradation is obtained in the fluorescence colors of lithopones which corresponds to their light fastness. Those showing a deep violet are most stable, pale violet denotes a less stable product, while a white fluorescence indicates one having the least stability to sunlight. In the exposure tests the samples are mixed with glycerine, and on exposure to light from the bare arc of an ultra violet lamp a defective sample will blacken in about 30 seconds to 5 minutes, whereas a reliable sample will be unchanged at the end of approximately 15 minutes.

Permcol—A New Hard Rubber

A SPECIAL form of hard rubber suitable for use in tropical countries has been introduced by the British Hard Rubber Company, Middlesex, England, under the name of Permcol. Discoloration and loss of surface insulation are defects usually affecting the appearance and the electrical qualities of hard rubber in the tropics. Permcol is said to resist deterioration under the action of heat and light. It is somewhat more brittle than the ordinary high electrical grades of ebonite. An analysis of one sample revealed the following composition: acetone soluble, 7.1; free sulfur, 1.05; combined sulfur, 25.55; ash (consisting of iron and aluminum oxides), 1.3; and rubber by difference, 65%.

Rubber Filter Press

FACED with the problem of finding a suitable filtering material for the filtration of acid liquors, both hot and cold, exhaustive tests conducted by D. R. Sperry and Company, Batavia, Illinois, filter press manufacturers and engineers, finally resulted in the



selection of rubber. The specific problem involved was the selection of a material that would successfully withstand the corrosive effects of acids at extremes of temperature.

In conducting their experiments, Sperry engineers placed specially-processed rubber plates in a bath of acid liquor. For three weeks a constant temperature of 275° F. was maintained. Upon removal, the plates showed no trace of warpage, corrosion, change in shape or damage of any kind.

The plates used in this latest Sperry Filter Press are of solid rubber, 36 inches wide. Their semi-hard body is very tough and prevents breakdowns or damage under unequal pressure.

The Future of Rubber

HAS RUBBER reached its peak of usefulness? Recent developments have met the increasing demands of civilization; great strides have been made in the technical division of the industry; improvements are noted on most products and processes. Despite all of this evident achievement, Dr. Norman A. Shepard, director of technical development for the American Cyanamid and Chemical Company, and, until recently in charge of Firestone research activities, states that "however remarkable the strides made in the past, the progress will continue, both through empirical and scientific investigation."

In an article in the March, 1936, issue of *Industrial and Engineering Chemistry,* Dr. Shepard reviews the progress made in recent years in vulcanizing agents, organic accelerators, synthetic or substitute rubbers, in the reclaiming of rubber, and in many other materials and processes vital to the industry. There are many reasons, in his opinion, which indicate how far rubber is from its actual peak of usefulness. He sums up these reasons as follows:

Cut-and-try methods will not bring the results that they have in the past, but they will bring results, and the more fundamental scientific investigations which are now in progress in the efficient, well-manned research laboratories and development departments of the larger rubber companies, as well as of those industries producing chemicals and materials for the rubber industry, will bring to light new facts and fundamental principles that may even revolutionize the industry.

The present investigations on the use of rayon, in place of cotton, to produce a tire which will withstand still better the punishment received in high-speed, high-temperature service, are indicative of what revolutionary moves are in the offing. It is possible even now to make a pneumatic tire without using a pound of cotton or rubber, the body of the tire being made of rayon from wood pulp and the rubber being replaced by DuPrene from coal, limestone and common salt. Practical? No, not yet! But who can say that the obstacles of cost and manufacturing difficulties will not be overcome?

Inflated and Folding Boats

(Continued from page 94)

means of a patented process. The "Walrushide" is also said to be treated with ultra violet rays to prevent aging and deterioration. The outer surface of the covering is finished off with a coating of rubber.

Because kayaks are often used in the far corners of the world by intrepid explorers, the Klepper models are fitted with rubber bumpers on bow and stern and made an integral part of the hide so there is no possibility for water and sand seeping through screw-holes. The bumpers are naturally shock absorbing and do not catch on obstacles or retain dents. Rubber spray-covers are furnished as optional equipment with these Klepper folding kayaks and effectively seal the cockpit opening in some models making it water-tight against rain, spray or breakers. Easily assembled, Klepper kayaks come packed in canvas bags, either two or four bags containing a complete assemblage depending on the size of the model.

Specially rubberized heavy-woven fabrics comprise the hull of the Folbot folding boats produced in this country by the Folbot Corporation, Long Island City, N. Y. The stem and stern of these boats are rubberized together with the hull thus securing complete water-tightness and preventing damage to the hull or frame when the boat strikes a blunt object.

The decks are made of colored canvas, the deck and body being of one-piece construction into which the framework fits snugly. Spray-covers, of rubber, may be provided for complete enclosure of the occupants in the 1, 2, 3 and 4-passenger models available. The company also furnishes inflatable rubber safety bags which, pushed under the ends of the Folbots under decks, act as air chambers and prevent the boats from sinking in the event of capsizing. Keel strips of rubber, 9 inches in width, for use in rough water are also available.

The Porto Boat produced by the Bair and Edgerton Boat Works, Glen Cove, Long Island, N. Y., has an outer surface made entirely of plywood which which is glued, stapled and waterproofed. The sections of plywood are permanently attached to one piece of seamless waterproof canvas with brass rivets. The canvas is thoroughly coated with a paint which has a rubber base, giving it pliability. The coating does not crack when these boats are in their folded form.

In addition to rubber parts which are used in the construction of inflatable and folding boats or furnished as separate pieces of standard equipment, such as those described, there are other rubber products particularly adapted for use in connection with these boats including various forms of cushions, pillows, etc. Since thousands of these boats are sold annually, the industry represents a sizeable outlet for rubber.

New Equipment

Improved Valve Fishing Tool

SEVERAL improvements have been incorporated in the Schrader Valve Fishing Tool produced by the A. Schrader's Son Division of the Scovill Manu-

facturing Company, of Brooklyn, N. Y. Time and trouble have been considerably lessened by the new tool which makes it possible to inflate the tire through a special cap, in addition to making it easier to "line up" the valve stem. Pulling the hinged saddle of the improved tool to one side anchors the valve so that application of the chuck will not force it back through the wheel hole.

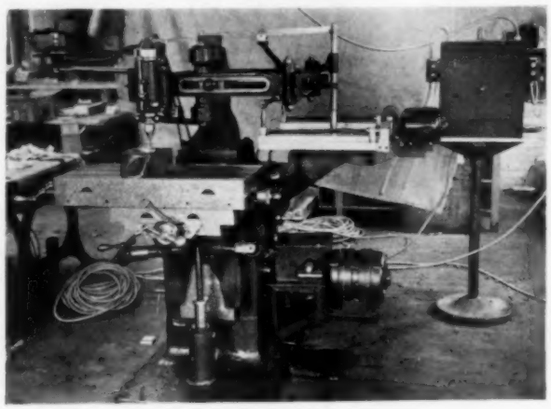
Strauss Foot Guard

THE foot guard illustrated herewith, a product of the Strauss Company, Inc., of Pittsburgh, was described in the April, 1936 issue of THE RUBBER AGE. It is made from either duraluminum or steel and is suitable for use where weights of not more than 40

pounds are liable to be dropped. Two clasp springs hold the guard firmly in place. Foot guards of this style are available in sizes to fit No. 5 to 12 shoes.

Marquette Engraving Machine

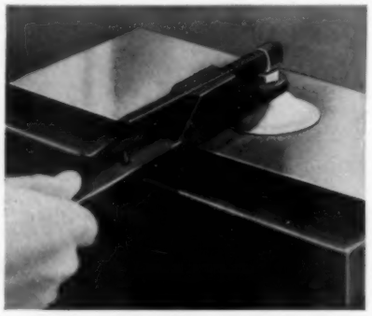
A NEWLY-DEVELOPED three-dimensional Pantograph unit, automatic, semi-automatic or manually controlled, has been added to the line of



engraving and cutting machines produced by the Marquette Mechanical Engineering Company, Erie, Pennsylvania. The new model is adapted for cutting dies and molds, including small rubber molds, in the third dimensional direction, as well as for flat work, ornamental designs, lettering, profiling, etc. It is said to facilitate the use of soft masters or models made of plaster and similar materials. The tracer mechanism is so constructed that it permits the use of blue-prints and reproduces the outline automatically. The new machine is furnished with four motors, ready for operation. Model No. 3H-Marquette-A is illustrated herewith.

Ipco Safety Vacuum Lifter

A PRACTICAL device to prevent accidents to fingers or hands of operators has been introduced by the Industrial Products Company, 800 West Somerset Street, Philadelphia, under the name of the Ipco



Safety Vacuum Lifter. The device is a tool which has a rubber vacuum cup secured to the main handle by means of a locking nut, with a trigger above the handle attached to a valve operating through the stem of the cup. In operation, the device is attached to a surface by striking the surface a smart blow, the vacuum being released by pressure of the thumb on the trigger which opens the valve. The vacuum lifter may be used for lifting, feeding and positioning sheet metal blanks in stamping machines and die press operations, dampness or greasy surfaces adding to the lifting qualities. New cups or valve facings are easily and quickly replaced.

Book Reviews

Du Pont Rubber Colors. Compiled and distributed by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

This is the fourth edition of the du Pont rubber color chart. It consists of seventeen loose-leaf pages in a binder, thirteen of the pages containing samples of rubber colored with the company's colors. There are three to four rubber samples on each of the pages, the properties of each specific color appearing in table form opposite the respective samples. This edition includes a number of new colors of the dispersed and colored lake types not heretofore included in these color charts. In addition to the properties listed on the sample pages, there is a table at the back of the book on the miscellaneous properties of the various colors, including bleeding, effect of stearic acid, bomb aging, etc. A basic formula was used for all of the samples shown. The booklet points out that all du Pont rubber-dispersed colors should be put on the mill and broken down with the crude rubber.

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R S L Materials in Dry Heat Compounding. Distributed by the Rubber Service Laboratories Division, Monsanto Chemical Company, Second National Building, Akron, Ohio.

Issued in the form of a loose-leaf pocket edition, this booklet contains a number of formulas for materials compounded in dry heat, such as black all rubber gaiter uppers, each formula including one of the company's accelerators or ultra accelerators or combinations of either or both. In addition, specific recommendations are made for the use of each accelerator in certain stocks. Results secured from various compounds at different cures follow each formula presented. Varying ratios of Ureka C, tetra methyl thiuram mono sulfide and sulfur are also contained in this booklet.

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Annals of Rubber. Issued by the India Rubber World, 420 Lexington Avenue, New York City. 20 pp.

Consisting of material which has appeared in recent issues of the *India Rubber World*, this booklet is a chronological record of the important events in the history of rubber from 1519 through 1935. It is an interesting compilation and follows the progress of the rubber industry step by step from practically the very beginning when it was referred to as a "most singular resin," a description given it by La Condamine. The more important patents granted by various governments are mentioned in the compilation.

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27th Report of the Rubber Growers' Association. Issued by the Rubber Growers' Association, 19, Fenchurch Street, London, E. C. 3, England. 56 pp.

The activities of the many committees and sub-committees of the R. G. A. for the year of 1935 are contained in this report which, incidentally, reveals that the 1,153 members, consisting of companies and individuals, control 3,601,000 acres of land approximately 70% of which is planted or inter-planted for rubber. A statement of accounts for the year is included in the report which also contains a complete list of members. Of specific interest is the report of the Technical Research Committee.

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Instruments from the Executive Viewpoint. Prepared and issued by the Brown Instrument Company, Philadelphia.

Stressing the slogan "To Measure and Control is to Economize," this booklet illustrates and briefly describes the part instruments and controls play in modern industrial plants. The importance of greater accuracy in all divisions of the production department is stressed throughout the booklet which should prove of specific interest to rubber production executives.

The Chemical Formulary. Volume 3. Edited by H. Bennett. Published by D. Van Nostrand Company, Inc., New York City. 566 pp. $6.00.

(Available from Book Department, The Rubber Age)

According to its preface Volume III of the Chemical Formulary is being published a year in advance of original plans because of "an insistent demand for new and additional formulae." This latest edition includes information specifically requested by users of the two previous volumes and contains two separate subject indexes, one devoted to the current volume and the other being a combined index for all three editions. As usual, a complete chapter is devoted to rubber while several pages are concerned with the impregnation of textile fabrics with latex. Like its predecessors, Volume III has thousands of formulas for new and standard products of all descriptions.

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M.U.F. Antioxidant—Effect in Sulphur Chloride Cured Goods. Prepared and distributed by Naugatuck Chemical Division, U. S. Rubber Products, Inc., 1790 Broadway, New York City. 6 pp.

This booklet contains the results of a series of tests conducted by Naugatuck Chemical to determine the effect in sulphur chloride cured goods of the several so-called commercial non-discoloring antioxidants on the market. These results cover the comparative action of competitive antioxidants, effectiveness of varying amounts of M.U.F., the action of M.U.F. in the presence of white substitute, and M.U.F. in stocks exposed to Florida sunlight. Complete details of the tests are contained in the booklet.

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Dry Heat Curing for Proofing. (Laboratory Report No. 194). Issued by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

Based on tests conducted in the du Pont laboratories, this booklet contains a series of recommendations of the amounts of accelerators to be used on the rubber for various rubberized fabrics cured in dry heat where the curing oven is both vulcanization chamber and accelerated aging oven. The accelerators include the several types produced by the company, such as Zenite, Heliozone, RPA No. 1, etc., while recommendations cover spread and calendered hospital sheeting, corset fabrics, calendered leatherette type stocks, etc. Several suggested compounds are contained in the report.

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Compounds for Heels and Soles. (Laboratory Report No. 195). Issued by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

Typical formulas of various qualities of heels and soles, together with recommended cures, are the subject matter of this laboratory report which points out that the percentage of accelerator necessary for a correct cure of heels and soles "will depend upon the retarding or absorption effect of the fillers and, also, the amount and type of reclaim used." According to the report, Zenite activated with a guanidine gives excellent acceleration for all grades of heels and soles, but Accelerator 808 can be used with equally as good or slightly better results in high-reclaim stocks. The results of physical tests follow each typical formula.

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Industry Again Faces Regimentation. By Allen W. Rucker, in collaboration with N. W. Pickering. Distributed by Farrel-Birmingham Company, Inc., Ansonia, Conn. 8 pp.

Sixteenth in the series of booklet-editorials prepared by the co-authors, this latest edition treats with the pending Walsh Bill which it terms another attempt of "planned economy" to enforce regimentation of business and labor and a scheme "to make the Secretary of Labor virtual dictator of American business." The Walsh Bill would give the labor secretary direct control over both the wages and working hours of all firms supplying the government as well as all firms selling to such suppliers. The booklet vigorously attacks the bill.

Editorial Comment

Synthetic or Substitute?

THE question is often raised whether synthetic rubber should be actually termed "synthetic rubber" or "substitute rubber." For the most part they are really "substitute" rubbers, but the term "synthetic" probably answers the purpose as well as any other term. Rubber is both elastic and plastic. The so-termed synthetic rubbers are also both elastic and plastic, some being more elastic than plastic and others the reverse. While it might be permissible to term some of these products "synthetic plastics" it would be misleading to put them all under this category since they all possess some degree of elasticity and vice-versa. Perhaps the answer lies in the statement of a leading British technologist, W. J. S. Naunton, "Surely the very word 'synthetic' in the term 'synthetic rubber' lays emphasis upon the synthetic origin of the product."

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Improvement Continuing

IF the attitude of both buyers and sellers at the recent American Toy Fair, which ended two weeks of activity on May 2, may be accepted as a barometer, then general business conditions are greatly improved. Despite the fact that this year's Fair lasted only two weeks in contrast to a three-week period in 1935, the attendance was larger, more orders were placed and more contacts made.

Almost everyone at the Fair, whether exhibitor or visitor, expressed an optimistic point of view for the immediate future, based on actual business contracted on the one side, and sales possibilities on the other. Several rubber manufacturers displaying their wares at either the Hotel McAlpin or the Toy Center reported sufficient orders taken to keep their factories stepping for the next several months.

That business was far better in 1935 than in the preceding year is now evident. Financial reports covering that year, just now coming to light, reveal that many rubber companies reversed losses into profits, others increased profits, while many others, still in the red, reduced losses. These were the rule, not the exception. For instance: Corduroy Rubber this month reports a net profit of $72,730 for 1935 as contrasted with a $25,918 loss in the preceding year; Gillette Rubber had a $305,303 profit as compared with a $191,193 loss in 1934; etc.

During 1935 production increases in the major industries gained almost without exception over 1934. These increases, according to figures supplied by the National Industrial Conference Board, were 92.4% for residential building, 86.1% for machine tool orders, 45% for automobiles, 30.6% for steel ingots, 9.3% for petroleum, 9.2% for electric power, and 19.5% for total construction. The volume of department store sales was 7.1% larger than in 1934. Miscellaneous and total car loadings gained. Other increases were reported.

Despite the fact that 1936 is a presidential year, business should continue to gain in leaps and bounds, with rubber manufacturers reaping their full share of the improvement.

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Bidding for Crude Rubber?

AN interesting prediction is made by the Division of Review of the National Recovery Administration in a statement accompanying a survey of the rubber industry recently concluded, i.e., that domestic rubber manufacturers will soon have to bid in foreign markets for their crude rubber requirements. This prediction is based on the fact that the restriction scheme is moving along to the satisfaction of the countries involved, with world stocks steadily diminishing.

It is doubtful whether the point will ever be reached where domestic manufacturers will actually have to bid for rubber in foreign markets. At present, world stocks are estimated at 600,000 tons, as compared with 654,000 tons last year. If, under the restriction scheme, total rubber supplies during this year amount to 850,000 as estimated, and world consumption rises to 950,000 tons as expected, then world stocks at the end of 1936 would be approximately 500,000 tons, or slightly more. At this rate, even if production continued to decrease by 50,000 tons yer year, and consumption continued to gain by 10,000 to 20,000 tons per year, it would be a long time until world stocks reached a point where manufacturers of rubber products would have to worry about supply.

There can be no doubt by this time that the restriction scheme is fulfilling the objects of its originators. Crude rubber prices have risen steadily; world stocks have diminished; cultivation has been curtailed; and the native rubber grower is slowly being brought under proper control. The native has been the only major difficulty of restriction, since native production alone could meet world requirements without any assistance of the estates, but individual restriction plus high export duties has minimized the problem he presented.

Irrespective of the success registered thus far by the restriction scheme from the rubber growing countries' viewpoint, it is still extremely doubtful whether domestic manufacturers will be required to bid for crude rubber in foreign markets. Because the United States uses approximately 50% of all rubber consumed, it will always receive first consideration in the matter of supply unless in times of war or other unforeseen factors.

CURRENT • NEWS
of the Rubber Industry

MAY, 1936

NRA Surveys Criticise the Rubber Industry for Its Merchandising and Labor Policies

One Survey Predicts Early Necessity of Bidding for Crude Rubber in Foreign Markets as a Result of the Restriction Scheme; the Second Treats with Labor.

THE rubber industry was the subject of two reports prepared by the National Recovery Administration, both of which were issued almost simultaneously last month at Washington. One report was devoted to the reactions of the restriction scheme, while the other dealt with the subject of labor. The industry was censured in both reports for some of its merchandising and labor tactics, although for the most part the report treating with the labor problem lauded the industry for its stand. These reports are part of a series being prepared by the various divisions of the National Recovery Administration on the rubber and other industries.

American consumers will soon be forced to pay considerably higher prices for finished rubber products because of restrictions on production and exports of crude rubber, according to one survey, which makes the prediction that domestic rubber manufacturers will have to bid for rubber in foreign markets before long, with resulting cost increases.

Reclaimed Rubber to Benefit

The necessity for such action, however, would not be entirely unwelcome, the report hints, as it would have a "stimulating effect on the production of reclaimed rubber and a generally salutary effect upon profits in the industry . . . though prices to consumers would naturally be increased." As an indication of the effectiveness of restriction, the report points to the rapidly dwindling London stocks and draws comparisons between exports from Great Britain to the United States for the first quarters of 1935 and 1936.

Sabotage on the part of the rubber industry itself, the same report continues, did much to wreck the NRA stabilization program. Criticising the industry's activities under the former code, the report also stated that competitive bias, partisanship and factional disputes contributed to the wreckage. In concluding its criticism, the survey states:

"Disorderly and destructive trade competition continued until recently. There has been continued mortality among efficient small enterprises who were without financial resources to continue operations at the profitless level being maintained. Just recently, there has been a cessation of hostilities, probably due chiefly to rising rubber costs. Possibly pressure from disgruntled security holders has had some effect."

The report on labor conditions, prepared by three members of the Division of Review of the NRA, commended the rubber industry for its voluntary shortening of hours to increase work since the abandonment of the rubber code, but at the same time warned that it is "open to criticism" should it attempt to "effect economies at the expense of workers to offset losses incurred by unsound distribution practices." The report also urged action by all branches of the industry to insure skilled employees against lay-offs caused by unfavorable business conditions.

"Perhaps the most pressing present problem in the industry, one that will continue to call for a solution," the report continues, "is to provide permanency and security of employment for the workers who have been recruited and trained in, and who are now dependent upon, the rubber industries for their livelihood."

Report Hits at Goodyear

Striking specifically at Goodyear for its recent decision to return to a basic 8-hour day instead of continuing with the 6-hour work shift plan it placed into effect in October, 1930, the report states that the action was taken "in order to provide greater flexibility and a part of their (Goodyear's) general program to stabilize year-round employment on the basis of 144 hours per month at an average monthly wage which should provide a higher living standard than existed in pre-depression days." Pointing to subsequent arguments between labor and the Goodyear management on this score, the report continues:

"This controversy is significant in that it represents an effort by one of the largest employers of labor in the industry to effect economy at the expense of labor, lengthening hours of work and reducing hourly wages despite the fact that this must increase the number of unemployed and add to the burden of public and private relief agencies. Here is a concrete example of the security and return of labor being undermined as a direct result of futile and destructive competition in the market place."

The report asserted that industrial establishments in 1933 had declined by 117 or 22.3% below the 1929 figure of 525. During that period tire manufacturing establishments decreased from 91 to 44, or 51.6%; boot and shoe manufacturers, from 22 to 13, or 40.9%; and other rubber manufacturing interests from 412 to 351, or 14.8%.

"The rubber business has been unprofitable even for the largest and most efficient units," the report concludes. "Small manufacturers, with limited working capital, have suffered through competition with their well-financed rivals. The decline in demand, due to lower automobile production and increased life of tires in use, has heightened the intensity of competition, reduced margins, and forced many smaller units into mergers, consolidations, or complete suspension of operations."

Farm-Grown Tires!

J. H. Van Deventer, editor of *Iron Age*, told 300 delegates attending the 38th Annual Convention of the National Metal Trades Association in New York City recently, that research in the coming decade and a half will help solve the farm problem. He predicted that materials for the 1950 automobile will have largely been "grown on the farm" including "farm-grown rubber tires and soybean bodies." Mr. Van Deventer did not amplify his statement concerning "farm-grown" rubber tires, but it is presumed that he meant rubber secured from plants such as the golden-rod and the like.

"DRUM" TIRE PATENTS REACH SUPREME COURT

On appeal from the decision of the Sixth Federal Circuit Court, the much litigated action by the United States Rubber Company against the Firestone Tire and Rubber Company over the flat band or "drum" method and machine for forming pneumatic tire casings reached the Supreme Court on April 15.

Originally, a special master and an Ohio Federal Court both held that Firestone infringed on the patents in the suit. This decision, however, was reversed by the circuit courts which held that part of the patents owned and controlled by U. S. Rubber were invalid and that others were not infringed by Firestone. Only one patent was said to have been infringed upon, but this covered a method since discarded by Firestone.

Accompanying the thousands of pages of evidence, attorneys for U. S. Rubber sent along a flat tire to the Supreme Court as the chief exhibit in its appeal. They explained that the tire had been "stored away for several years in an unvulcanized state and has become somewhat misshapen."

The appeal specifically accuses Firestone of "borrowing a set of patented tire devices for a 60-day trial" and that it then "proceeded to practically duplicate this equipment in defiance of petitioner and its patents." It also stated that the patents concerned in the suit had revolutionized the industry by the "drum process."

U. S. Rubber attorneys said that all major tire manufacturers, except Firestone, were paying royalties to the company for use of the process involved in the litigation.

Because members of the Supreme Court are faced with a mass of testimony, documentary evidence, and many physical exhibits, it will take several months before a final decision will be rendered.

F.T.C. AUTHORIZES TRADE CONFERENCE

Although the time and place are yet to be selected, the Federal Trade Commission has authorized the holding of a trade practice conference for the rubber tire industry. It is believed, however, that the conference will be held in the mid-West, probably in Chicago, some time early in June. The purpose of the conference is to eliminate certain unfair trade practices complained of within the industry, such as misbranding, price discrimination, misrepresentation, etc., by co-operative action.

Authorization of the planned conference was brought about by a request of the National Association of Independent Tire Dealers made late in 1935. Upon application of the Association, the FTC circularized various members of the industry in all its branches to determine whether a consensus favored the conference, the response indicating that the majority desired it to be held.

At the present time there are approximately 50,000 independent retail tire dealers, about 45,000 gasoline stations at which tires are sold, nearly 1,750 company-owned stores, about 1,400 chain and mail order stores, and 32 tire manufacturers. Invested capital in the industry is estimated at two billion dollars with an annual volume of business approximating $750,000,000. The number of employees varies between 150,000 and 250,000.

Commissioner Robert E. Freer has been designated to preside over the trade practice conference.

Warning

It has been called to our attention that several New York photographers are contacting rubber executives claiming they are authorized to take photographs for reproduction in THE RUBBER AGE, the 'racket' obviously being to sell duplicate photographs. THE RUBBER AGE wishes to state it has issued no blanket authorization to take any such photographs, and it will be appreciated if this office be notified if any attempts are made to use our name in this connection.

THE PUBLISHERS.

RUBBER INDUSTRY USES MORE COTTON YEARLY

According to statistics compiled by the Cotton-Textile Institute, the use of cotton by the rubber industry is steadily increasing. In 1935, approximately 305,000,000 pounds, or 642,103 bales, were consumed by various divisions of the trade.

Automobile tires, alone, accounted for 250,000,000 pounds, or 526,315 bales, of cotton during the year, the Institute reports, this amount being consumed in the production of cord and square woven fabric. Including the fabric in the tires, top and tire covers, upholstery, brake band, etc., the average automobile now represents the consumption of between 50 and 60 pounds of cotton.

Another important outlet for cotton in the rubber industry is the footwear division, some 15,000,000 pounds (31,578 bales) being absorbed last year in the production of uppers for tennis and juvenile rubber-soled shoes, linings for rubbers, gaiters, and other types of waterproof footwear.

A long list of miscellaneous rubber products, such as raincoats, belting and hose, hospital sheeting and rubberized fabrics for many purposes, annually consume upward of 40,000,000 pounds, or 84,210 bales, of cotton.

The statistics were revealed by the Institute in connection with plans for National Cotton Week, June 1 to 6, the slogan for which is "Everybody Uses Cotton."

MURRAY RUBBER ASSETS ARE SOLD AT AUCTION

All machinery and equipment of the Murray Rubber Company, of Trenton, N. J., including a stock of 50,000 tires and tubes, were sold at public auction on April 14 and 15. The tires and tubes were purchased in lots of 100 or more by jobbers and retailers, while the machinery and equipment was bought by several rubber manufacturers in and out of Trenton, in addition to lots sold to L. Albert and Son and the Citron-Byer Company, rubber machinery dealers, both of Trenton; I. Freed, of New York City; Consolidated Products Co., Inc., of New York and Newark, N. J., and others.

In addition to the sale of the equipment and stock, sealed bids were received for the 30 acres of land and the several buildings of the company. The complete plant was purchased last December by Max Kalter and Company, of New York City, for $340,000. Kalter acted as one of two auctioneers.

Formerly occupied by the Empire Tire and Rubber Company, of which General C. Edward Murray was president, the factory was taken over by the Murray Rubber Company in 1922 which was organized in that year by E. Edward Murray, Jr., and his brother, J. Cornell. In 1930 both Murrays resigned and became affiliated with the Crescent Insulated Wire and Cable Company. In the same year, Arthur H. Branham, representing Caldwell and Company, of Nashville, Tennessee, was appointed equity receiver by the courts.

The death knell of the Murray concern was sounded several years ago when a mail order concern cancelled an order calling for the delivery of 50,000 tires and tubes a month. Murray brought suit against the mail order house for $5,000,000 for breach of contract, the suit finally being settled.

ESSEX RUBBER CO. TO CONTINUE OPERATIONS

Continued operation of the Essex Rubber Company, Trenton, N. J., was assured last month following approval of a reorganization plan by the United States District Court at Trenton. By order of Federal Judge Philip Forman, Essex is being permitted to reorganize under Section 77-B of the Federal Bankruptcy Act. The reorganization plan submitted was approved by officers, creditors and stockholders.

Payment under the reorganization plan to creditors is expected to be made on or before May 29 on the strength of an approved RFC loan to the company, with the payments temporarily held up pending the expiration of an appeal. More than 83% of the creditors involved are said to have approved the plan which also received the support of a majority of stockholders. Essex, under normal conditions, employs approximately 400 persons for the manufacture of rubber heels and soles, automobile matting, and other products.

KANSAS CITY MEETING OF RUBBER DIVISION

The Spring meeting of the Rubber Division, A.C.S., was held on Wednesday and Thursday, April 15 and 16, in Kansas City, Missouri, with about 75 members in attendance. Dr. Norman A. Shepard, chairman of the Division, in opening the meeting on Wednesday afternoon, delivered a brief address on the progress of synthetic rubber and pointed out that in the event of war this country could produce enough synthetic rubber as well as rubber from such vegetable sources as the goldenrod plants, to fulfill domestic requirements. He also paid tribute to Father J. A. Nieuwland, one of the pioneers in the development of the synthetic product.

Five Papers Are Presented

Five papers were presented on the first day, as follows: The Effect of Vulcanization on the X-Ray Diagram of Gutta-Percha, by C. S. Fuller (Bell Telephone Labs.); Changes in Properties and Structure of Carbon Black Accompanying Loss of Rubber Reinforcement Characteristics, F. M. Amon (Cabot); Reinforcement of Rubber by Pigments. III. Comparative Rating of Rubber Gas Black by Heat of Wetting Measurements, C. W. Walton and H. J. Osterhof (Goodyear); Impact Machine for Testing the Tensile Properties of Rubber at High Speed, George J. Albertoni (Goodyear); and The Pendulum as a Source of Energy for Plasticity Measurements, by Ira Williams (du Pont). Abstracts of these papers appeared in the March, 1936, issue of THE RUBBER AGE.

On Wednesday night, the Rubber Division Banquet was held in the Aztec Room of the Hotel President, with more than one hundred in attendance. F. W. Frerichs, of the Cupples Company, was chairman of the Entertainment Committee, assisted by F. W. Knoke and others. The banquet was declared a success on all scores.

Opening the session on Thursday morning, April 16, Harold Gray, of Goodrich, chairman of the Crude Rubber Committee, rendered a report of the activities of the committee since the last meeting of the Division. Because all such reports are automatically the property of the American Chemical Society, it was not made available to be published in connection with this story, but it is hoped it will be released for a later issue.

Papers Committee Appointed

Following discussion on the Crude Rubber Committee's report, Chairman Shepard appointed Ira Williams, Charles Park and Roscoe H. Gerke as members of a Papers Committee to serve one, two and three years, respectively. It will be the duty of this committee to handle all papers to be presented at divisional meetings, arrange programs, etc.

A motion was made and carried at this session making H. E. Simmons, president of Akron University, an Honorary Member of the Rubber Division for the work which he had done for the Division while acting as its secretary and treasurer from 1927 until his resignation in 1934 which was forced by pressure of his university duties.

In making his regular report, Secretary-Treasurer C. W. Christensen revealed that up to April 10, 1936, there were 387 paid members, of which 74 were associate members. New members and associate members for 1935 totaled 42. The Division also includes 30 honorary members and exchanges.

Form Knickerbocker Rubber

The Knickerbocker Rubber Company has been formed, with offices at 216 North Clinton Street, Chicago, to take over the assets of the Knickerbocker Mfg. Company of Glen Ellyn, Illinois. The former company produced the line of Knickerbocker bath sprays for many years, production of which will be continued by the new company among other items.

RTA of London Moves

The Rubber Trade Association of London, and the London Rubber Exchange Company, Ltd., are now located on the eighth floor of Plantation House, in Mincing Lane, London.

Enlarging Leader Factory

Approximately $27,500 is to be spent in enlarging the factory of the Leader Rubber Company, of Fremont, Ohio, according to C. A. Patterson, manager. The expansion program covers the erection of a new building, 30 by 40 feet, and the purchase of several mills. Application is also being made to incorporate the company under its present name, with 1,000 shares of no-par stock to be sold for $25 each. H. L. Younker, of Fremont, is scheduled to be president of the incorporated firm. Leader manufactures auto door checks, handle grips, valve grinders and rubber toys, with production on seat cushions, rubber handles for screwdrivers and knives, and other products, set for the early future. Mr. Patterson has been associated with the rubber industry for 19 years.

Germany Specifies Tubing

The German Specifications Committee has recently prepared standards for rubber tubing and discs used for beers, mineral waters and fruit juices. These materials must be 60% pure rubber content, the tubing must not crack and the inner walls must be smooth and seamless. To encourage more economical production, the Committee has also decreed that the sizes also be standardized.

LAST MINUTE NEWS

Settle Labor Flare-ups at Firestone and Goodyear

Charging that the company had placed two "pace-setters" in their department, 175 truck tire workers at Firestone "sat down" on May 7, tying up 500 other workers. At a meeting the following day they voted to return to work immediately after differences had been ironed out with the management. Firestone executives denied that any "pace-setters" had been placed in the department but stated that the company would not agree to limit the output in earnings of its employees. At Goodyear, five "sit-downs" occurred in the early hours of May 6 over fancied grievances, all of which were quickly settled.

Recommend Fisher as India Tire Receiver

Harry L. Snyder, special master commissioner, of Akron, recommended on May 6 that John T. Fisher, secretary of the India Tire Company, be named as temporary trustee of the company while liquidation proceedings are pending. Although the original submitted reorganization plan fell through, a second plan is understood to be in the making and will be submitted on May 26, the date set for the hearing of Mr. Snyder's report by Judge West, at Cleveland.

Goodyear Completes 250 Millionth Tire

Goodyear passed the 250 millionth tire mark this month, a mark unequalled in the rubber industry. President Litchfield personally applied the tread to the tire, a Double Eagle Airwheel of the "super" type just recently announced. R. S. Wilson, Sales manager, also participated in the ceremonies.

Old Firestone Cotton Mills Sold to Crescent Co.

The Firestone Cotton Mills, at Fall River, Mass., which ceased operating several months ago, were sold to the Crescent Machinery and Supply Company, of Fall River, on May 6. The machinery will be liquidated and the buildings rented in whole or part for industrial purposes. Firestone recently purchased the Manville-Jenckes mills at Gastonia, N. C.

RUBBER GROUP ACTIVITIES

Akron Elects New Officers; New York Completes Plans for Its Summer Outing; Los Angeles Holds Golf Tournament; Other News

Akron Rubber Group

The principal speaker at the Akron Rubber Group meeting held Friday, April 24th, at the Akron City Club, was Mr. Thomas J. Midgely who spoke on "The Possibility of Future Synthetic Rubbers." An audience of over 200 heard Mr. Midgely state that it appeared that we have only scratched the surface in the matter of synthetic rubber and that within the next few years it is possible that many new synthetic rubbers may be introduced, some of them undoubtedly at a very low price. This was the concluding statement in a talk which reviewed briefly the past endeavors to produce commercially possible synthetic rubber.

Mr. Midgely stated that the chemistry of synthetic rubber has opened up new fields as to what is in store for the industry in the future. He foresees many new properties in some of the materials which may be developed. His talk covered the history of synthetic rubber particularly since the isolation of isoprene which, he stated, is probably the unit out of which the rubber molecule is formed.

One of the milestones in the development of synthetic rubber was the discovery in 1910 that isoprene would polymerize into a rubber-like substance in the presence of sodium. He described the structural form of isoprene and compared it with that of rubber. Mr. Midgely also discussed the Mack theory of the elasticity of rubber, which in a way questioned the work along similar lines by Staudinger.

An added speaker at this meeting was Peter P. Pinto, General Manager of THE RUBBER AGE, who gave the paper on "Strange Patents" which he had previously delivered at meetings of the New York and Boston Rubber Groups. This paper was illustrated by slides showing some of the many odd patents granted to inventors.

At the election of officers which was held at the conclusion of the dinner, Enos H. Baker of Binney & Smith Company was elected Chairman of the Group, succeeding A. G. Brill of the Republic Rubber Company. George L. Allison of the B. F. Goodrich Company, who has served as Secretary-Treasurer during the past year, was elected Vice-Chairman. Dr. A. E. Warner of C. P. Hall Company was elected Secretary-Treasurer.

ENOS H. BAKER
New Chairman of the Akron Group.

Rhode Island Rubber Club

A meeting of the Rhode Island Rubber Club will be held on Thursday, June 4, at the Metacomet Golf Club, East Providence, Rhode Island, with a steak dinner scheduled for 7:00 P.M. The first of a series of golf tournaments will be held at the golf club during the afternoon, the seasonal winners of which will be awarded silver cups donated by THE RUBBER AGE. R. P. Dinsmore, assistant factory manager of Goodyear at Akron will speak after the dinner on "The Rubber Business at Home and Abroad." Tickets for the dinner cost $1.50, with a $1.00 green fee charged to golfers. Reservations may be made with F. E. Rupert, Anaconda Wire & Cable Company, Pawtucket, R. I., secretary-treasurer of the group.

New York Rubber Group

The Annual Outing and Picnic of the New York Group, Rubber Division, A. C. S., will take place on Saturday, June 13, at the Alps Castle, Preakness (near Paterson), New Jersey, the same site as last year's outing, with activities scheduled to begin at 9 A. M. Beer, frankfurters and sandwiches will be served all day, with a steak dinner to be served at 4 P. M.

An active afternoon of sporting events has been arranged including golf, tennis, boochie, soft ball, horseshoes, swimming, boxing bouts, etc. Three bouts will be put on at 3:15 at which plenty of action is guaranteed. J. Miscall, of Flintkote, will act as master of ceremonies for the day. The schedule of events, and the men in charge of each, follow:

Golf, F. E. Traflet (Pequanoc); tournament starts at 9:30, all entries closing at noon. A trophy donated by the United Carbon Co. will be awarded the golfer with the lowest gross score. There is a $1.50 charge for participants. *Boochie*, J. Carroll (Carroll Co). *Soft Ball*, C. L. Smith (Naugatuck). *Tennis*, Don Comes (Farrel-Birmingham). *Horseshoes*, D. C. McRoberts *(India Rubber World)*. *Boxing*, Bill Higgins (United Carbon). Prizes will be awarded to the winners of the various events.

There are several approaches to the Alps Castle grounds. Highway 23 from Newark leads straight to the spot as does Highway 4 which starts on the New Jersey side of the George Washington Bridge. Both the Erie and Lackawanna lines lead to Paterson where arrangements will be made to meet train comers with automobiles.

W. C. Lingvall, Development Department, U. S. Rubber Products, Inc., at Passaic, is chairman of the Picnic Committee. Members of the General Picnic Committee, with their company connections in parenthesis, follow:

H. R. Ferguson (Thiokol); G. Becktel (Am. Oil & Supply); C. J. Wright (General Atlas); P. Murawski (du Pont); K. Gillespie (Stamford Rubber Supply); L. Edland (Vanderbilt); J. R. Keating (Binney & Smith); J. Muehlstein (Muehlstein); E. Schwartz (General Electric); J. Carroll (Carroll Co.); D. Comes (Farrel-Birmingham); C. A. Bartle (du Pont); W. F. Tuley (Naugatuck).

Other members include: K. J. Soule (Manhattan Rubber); G. S. Haslam (N. J. Zinc); K. B. Carey (Okonite); C. L. Smith (Naugatuck); L. D. Ack-

Photos by Allyn K. Thayer

Some of the celebrities at the Akron meeting: left to right, Messrs. Smithers, Warner (back to camera), Street, Nahm, Oenslager, Trumbull, Cosler and Littman

erman (Seamless Rubber); P. P. Pinto (THE RUBBER AGE); W. Higgins (United Carbon); R. K. Opper (U. S. Rubber); R. E. Casey (Naugatuck); D. C. McRoberts *(India Rubber World)*; W. O. Hamister (Naugatuck); J. Miscall (Flintkote); and F. E. Traflet (Pequanoc).

Tickets for the combined outing and picnic, which are selling at $2.50 each, may be secured from Mr. Lingvall, the chairman of the committee, from Peter P. Pinto, secretary-treasurer of the New York Group, c/o THE RUBBER AGE, 250 West 57th Street, New York City, or from any of the committee members listed above.

Boston Rubber Group

The next meeting of the Boston Group, Rubber Division, A.C.S., has been set for May 27 at the Hotel Kenmore, in Boston. Mr. H. F. Wakefield of the Bakelite Corporation, Bloomfield, N. J. will deliver a paper on "Phenol-Formaldehyde Resins and the Rubber Industry" while H. Walter Grote, of the United Carbon Company will demonstrate his latest tricks. Dinner will be served at the usual hour. The secretary of the Boston Group is Royce J. Noble, 56 Wilbur St., Malden, Mass.

Los Angeles Group

The last monthly supper meeting of the Los Angeles Group, Rubber Division, A. C. S., to be held this season was held on Tuesday evening, May 5, in the Chinese Room of the Los Angeles Athletic Club. Seventy-five members and guests attended the supper and five others came in for the program.

J. K. Fleshman, chemist, U. S. Rubber Company, Los Angeles, gave a demonstration with liquid air, using equipment that he brought with him to illustrate points made in his address.

Joseph O'Connell, superintendent of the W. C. Hardesty Company, Wilmington, California, read a paper on "New Developments of Stearic Acid." The Hardesty Company is represented in the Los Angeles area by the B. E. Dougherty Company.

Warren Loud, president of the Industrial Oil Products Company, Los Angeles, gave a talk on fish oils and his son, Stanley Loud, showed moving pictures of a whaling expedition off the California coast.

Charles Lamb of the West American Rubber Company, Los Angeles, group critic, gave a Walter Winchell "digression."

A special feature of the meeting was the presentation of a briar pipe to each man present by Godfrey L. Cabot, Inc., through the local sales representative, B. E. Dougherty.

Door prizes, presented by THE RUBBER AGE, through J. Edw. Tufft, local correspondent, were won by the following members of the group: *First prize*, pearl handle pocket knife, S. A. Tanney, of H. Muehlstein and Company; *second prize*, a thermos bottle, E. B. Caldwell, of Goodyear; *third prize*, a desk thermometer, Arthur Wolff, representative of The New Jersey Zinc Sales Company.

The next regular supper meeting will not be held until the first Tuesday in October although special meetings may be called if advisable during the summer months.

Social activities for the summer as tentatively outlined will consist of a golf tournament in June, a fishing trip in July, and golf tournaments in August and September.

Chicago Rubber Group

The Chicago Group, Rubber Division, A.C.S., held its last meeting of the season on May 1 at the Hotel Sherman in Chicago, with J. Kirschner, chief chemist of the Dryden Rubber Company, presiding as chairman. Dinner was served in the College Inn of the Sherman, as usual, with entertainment provided by Abe Lyman's orchestra and a group of celebrated stars.

Following the dinner an interesting technical program was presented, headed by Captain Harry A. Kuhn of the Chicago Chemical Warfare Procurement District, a member of the group, who discussed "Rubber in Chemical Warfare." Captain Kuhn described the various uses of rubber materials in government service.

The second speaker was Dr. J. C. Patrick, research director of the Thiokol Corporation, who discussed "Thiokol Development." Dr. Patrick told of the developments leading to the discovery of Thiokol and described several instances where synthetic rubber has been put to good use.

Course in Colloid Chemistry

A special Summer course in colloid chemistry, under the direction of Dr. Ernst A. Hauser, has been announced by the Massachusetts Institute of Technology, Cambridge, Mass. The course will run for five weeks, from June 16 to July 21, inclusive. Although no specific mention is made in the announcement as regards rubber, Dr. Hauser advises that rubber will receive a prominent part in the lecture course while the laboratory course will offer a number of opportunities to become familiar with the methods of rubber goods manufacture and of problems pertaining to rubber and latex chemistry and analysis. If sufficient interest in rubber technology is indicated by registrants, Dr. Hauser will give a special series of lectures on the subject without any extra charges. Tuition for the five week course has been set at $150, which includes the Summer Session registration fee of $5. A limited number may be permitted to take the lectures without laboratory work at a tuition fee of only $75. Dr. Hauser is Associate Professor of Chemical Engineering at the Institute.

L.A. GROUP HOLDS GOLF TOURNAMENT

Group participating in the first golf tournament of the season. Standing, left to right, Messrs. Balazs, Abbott, Royal, Pickard, Woerner, Hucks. Seated, Messrs. Hummer and Stentz.

The first golf tournament of the 1936 season of the Los Angeles Group, Rubber Division, A.C.S., was held on April 18, at the Lakewood Country Club, in Long Beach, and attracted thirty members. P. A. Ritter (U. S. Rubber) won the trophy cup which, according to the rules of the Group, he retains until defeated in a subsequent tournament. W. W. Penfield (Firestone) won the blind bogey first prize, with the second prize going to B. E. Dougherty (Dougherty Co.). Following the tournament a Dutch luncheon was served in the club building, and a motion picture on golf was shown by E. G. Brooks of the California Golf Products Company, of Los Angeles. M. Montgomery, of the Martin, Hoyte and Milne Company, and H. H. Hummer, of the Xylos Rubber Company, composed the committee in charge of the tournament.

NEW ENGLAND

Misfortune struck three times within a month at the Middletown Rubber Company, Middletown, Conn., in the form of a flood, a fire and the death of a former director. The plant suffered severe damage from the Connecticut River flood late in March and was unable to resume production for some time after the waters receded because of the lack of electric power. On April 16, fire started in a vulcanizer on the second floor of the plant but the sprinkler system prevented any serious spread. Loss was not considered heavy. On April 27, Francis A. Beach, for many years a director of the Omo Mfg. Company, before its acquisition by the present Middletown Rubber Company in 1934, died at Middlesex Hospital. Mr. Beach sold his interest in the company when the transfer was made.

A. G. Spalding & Bros., Chicopee, Mass., which suffered heavy loss in the recent Connecticut River flood, has been advertising in newspapers further down the valley for several cases of crude rubber which were carried away by the rampant river. A reward was offered for return of the cases, if found.

Walter H. Norton, factory manager of United States Rubber Products, Inc., Naugatuck, Conn., posted notice on May 1 that lack of customers' orders will necessitate closing of the tennis mill from May 11 until May 18, and that unless business improves another closing will be required the week before the annual factory-wide shutdown, July 2 until July 19.

Beginning May 26, Mr. Norton advised, the mill will probably operate on a four-day basis with a minimum of eight conveyor lines until the summer shutdown. Some of the tennis operators will be transferred to the waterproof mill, but waterproof production may have to be curtailed earlier than had been expected because of a heavy production schedule in that division.

A. G. Spalding & Bros., Chicopee, Mass., is now carrying on regular production with about 950 employees, and this number is expected to be increased as the season's peak approaches to about 1,100. All flood rehabilitation work at the plant has been completed. Business prospects for the balance of the season are described as good, with demand running well ahead of last year.

Nelson W. Pickering, president of Farrel-Birmingham, Inc., Ansonia, manufacturers of rubber mill machinery, has been appointed a member of the reception committee for the 37th annual banquet of the Connecticut Chamber of Commerce at the Hotel Bond in Hartford on Tuesday, May 26.

Sears Not Affected

Sears, Roebuck and Company will not be affected by the recent decision of the Federal Trade Commission against the sales policy of the Goodyear Tire and Rubber Company, Robert E. Wood, president of the mail order house, told stockholders at the annual meeting of the company held in Chicago on April 28. In reply to a question on the subject, Mr. Wood replied that "It may simply mean that the company (Sears) might have to enter into a contract with somebody else." He also intimated that a tire contract "just as favorable" could be made with "some other company." Goodyear recently appealed the F. T. C. decision.

Novel Market Letter

A. Schulman, Inc., of Akron, dealers in crude and scrap rubber, and hard rubber dust, has adopted a novel method of advising customers and prospects of current quotations on crude rubber. A mailing piece, die-cut and colored to represent a bale of crude rubber, contains a removable "rubber-gram" on which closing spot prices for various grades of crude, including ribbed smoked sheets and latex crepe, are written. In this manner Schulman customers are kept advised daily on crude rubber prices.

Open New York Office

The Gates Rubber Company, Denver, Colorado, has announced the opening of a regional warehouse and sales office at 71 Murray Street in New York City. A complete stock of rope drives, V-belts, commercial hose and mechanical rubber goods will be carried at the new office.

TRENTON NEWS

Thermoid Rubber Company, Trenton, announces the development of a new belting called Plytex for high speed transmission over small pulleys. It is made of a specially constructed light weight silver duck fabric, with a high test friction between plies, and is furnished in 4, 5, 6, and 7 plies from one to eight inches. One of the features of this new belting is its extreme flexibility, assuring positive transmission, no matter how great the operating speed or how small the pulley application. It has been approved for use in many industrial fields.

Franklin Rubber Corporation, Doylestown, Pa., manufacturers of plumbers' rubber goods, has closed its plant. The concern was formerly known as the Rubber Products Corp., and was a New Jersey corporation. J. A. MacEwan, formerly associated with the Hodgman Rubber Company, was general manager of the company. The company at one time manufactured automobile inner tubes.

The distribution branch of the Puritan Rubber Company, Trenton, at Pittsburgh, was damaged by the recent flood when water reached the second floor of the building. The branch has been put into shape again.

Harold S. Maddock and Joseph F. O'Shaughnessy have been named by Federal Judge Philip Forman as permanent trustees of the Essex Rubber Company, Trenton, in a reorganization move under the National Bankruptcy Act. They had been serving as temporary trustees. Mr. O'Shaughnessy is president of Essex, while Mr. Maddock was formerly equity receiver. A reorganization plan will be submitted to creditors and stockholders shortly.

New Jersey rubber manufacturers profited by the recent floods in the New England and mid-western states when large orders were received for suction and fire hose. Many orders were also received for rubber boots and shoes.

Thermoid Company, Trenton, is placing on the market a new piece of equipment for stocking brake linings and is placing it in workshops at brake service stations in the nature of a work bench. It is called the Thermoid Brake Service Table and is 32 inches high, 42 inches wide and 24 inches deep. A bracket for mounting a brake lining cutter and a hook to hold the roll while the lining is being cut are attached to one end of the table.

INTERNATIONAL PULP CO., *41 Park Row, New York, N.Y.*

SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER

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Financial News

U. S. POSITION GOOD, STOCKHOLDERS TOLD

The financial position of the U. S. Rubber Company is steadily improving, William de Krafft, chairman of the finance committee, told stockholders at the annual meeting held in New York City on April 21, with earnings running along at about the same level as last year. Because of the extended Winter and the recent flood ravages, sales of tires have slowed up but footwear sales have been substantially increased.

One dollar has been put back into the company during the last six years, according to Mr. de Krafft, for each share of preferred stock outstanding, this action being accomplished through the reduction of debts by $40,000,000, addition and improvement to factories amounting to $20,000,000 and miscellaneous items amounting to $10,000,000.

Stockholders were informed that the plants at Providence, R. I., and Montreal, Canada, both producing "Lastex" products, are showing satisfactory profits, while the "Lastex" plants in France, Italy and England are beginning to show satisfactory profits. U. S. Rubber is associated with Dunlop Rubber in a cross-licensing agreement for the manufacture and sale of "Lastex" in England and France and sponge rubber cushioning in the United States.

U. S. Rubber also has under consideration a plan to refund its $50,000,000 first and refunding mortgage bonds due January 1, 1947, for the purpose of freeing the company from certain restrictive requirements. One restriction the company is understood to be desirous of removing is the requirement that net unencumbered quick assets of subsidiaries be maintained at $30,000,000 of which at least $20,000,000 is to be in companies the stock of which is directly pledged under the mortgage. This requirement, however, does not extend to the General Rubber Company which owns the Far East rubber plantations of U. S. Rubber.

Another requirement in the current indenture states that no dividends may be paid on the preferred except from earnings made after December 31, 1916. There is a moot question as to whether this indicates accumulated earnings or any one year's earnings. Under the accumulated earnings interpretation there would be an accumulated deficit of $25,870,000 since the end of 1916.

Loss for Fisk Rubber

For the quarter ended March 31, 1936, the Fisk Rubber Corporation, Chicopee Falls, Mass., reports a net loss of $268,511 after Federal taxes and other charges, contrasted with a net profit of $42,745 for the similar quarter of 1935. The 1935 quarterly profit was equal to $1.17 a share on 36,579 shares of 6% preferred stock. Gross sales for the 1936 quarter were $2,029,589 as compared with $2,666,066 last year.

Thermoid Earns $45,066

Net profit for the quarter ended March 31, 1936, earned by the Thermoid Company, Trenton, N. J., and wholly-owned domestic subsidiaries, including the Thermoid Rubber Company, amounted to $45,066 after provision for Federal taxes. For the twelve months ended March 31 the consolidated report shows a net profit of $84,642 after provision for Federal taxes which compares with a net loss of $99,531 for the previous twelve months.

Corduroy Reports Profit

A net profit of $72,730 for the year of 1935 after depreciation and other charges, is reported by the Corduroy Rubber Company, Grand Rapids, Michigan. This compares with a net loss of $25,918 in 1934. Net sales last year amounted to $1,998,161 as compared with $1,662,397 in the previous year.

Profit for Gillette Rubber

For the year ending December 31, 1935, the Gillette Rubber Company, of Eau Claire, Wisconsin, reports net income after depreciation, taxes and other charges of $305,303, equal to $1.53 on each of 199,762 capital shares. The company reported a net loss of $191,193 in 1934.

Profit for Dunlop (Eng.)

Dunlop Rubber Company, of England, in a preliminary report, shows a profit of £1,288,244 for 1935 before deducting taxes, approximately $6,400,000 at the current rate of exchange, which compares with a net profit of £1,687,687 (approximately $8,000,000) reported in 1934.

National Reduces Loss

For the year of 1935 a net loss of $81,382 was sustained by the National Rubber Machinery Company, Akron, after taxes, depreciation, interest and other deductions which compares with a loss of $123,038 in the preceding year.

Canadian Goodrich Has Loss

The Canadian Goodrich Company, Ltd., had a net loss of $6,846 after depreciation and other charges for the year of 1935, which compares with a net loss of $5,358 in the previous year.

MARCH CONSUMPTION 16.2% OVER FEBRUARY

Consumption of crude rubber by manufacturers in the United States for the month of March is estimated to be 42,703 long tons, which compares with 36,746 long tons for February. March consumption shows an increase of approximately 16.2% above February, and practically no change as compared with March a year ago, according to statistics released by the Rubber Manufacturers Association. Consumption for March, 1935, was reported to be 42,620 long tons.

Imports of crude rubber for March are reported to be 37,451 long tons, an increase of 6.3% above the February figure of 35,219 long tons, although 15.0% below the 44,041 long tons imported in March, 1935.

Total domestic stocks of crude rubber on hand on March 31 are estimated at 267,519 long tons, which compares with February 29th stocks of 273,284 long tons, and 338,700 long tons on hand March 31, 1935.

Crude rubber afloat to U. S. ports as of March 31 is estimated to be 58,935 long tons, as compared with 46,532 long tons afloat on February 29, and 44,485 long tons afloat on March 31 a year ago.

March reclaimed rubber consumption is estimated at 8,767 long tons; production, 10,712 long tons; and stocks on hand, March 31, 29,161 long tons.

TIRE SHIPMENTS FALL 17.1% BELOW JANUARY

Shipments of pneumatic casings during the month of February are estimated to be 3,211,040 units, a decrease of 17.1% under January and 2.3% below shipments made in February, 1935, according to statistics released by the Rubber Manufacturers Association.

Production of pneumatic casings for February is estimated to be 3,577,221 casings, a decrease of 21.9% under January and 18.4% below February, 1935.

Pneumatic casings in the hands of manufacturers on February 29th, 1936, are estimated to be 9,264,595 units, an increase of 3.9% above the stocks on hand January 31, although 19.6% below stocks on hand February 28, 1935.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
Feb., 1936	3,211,040	3,577,221	9,264,595
Jan., 1936	3,874,764	4,578,710	8,918,177
Feb., 1935	3,287,394	4,382,663	11,529,560

Lake Shore Tire Reopens

After a shut-down of several years, the factory of the Lake Shore Tire and Rubber Company, at Des Moines, Iowa, has recently been reopened. This factory manufactured tires for Sears, Roebuck and Company in the past and it is understood that it will again make tires for the same mail order house.

Names in the News

A. L. Freedlander, vice-president, Dayton Rubber Manufacturing Company, Dayton, Ohio, was elected president of that company early this month, with John A. MacMillan being advanced to the chairmanship of the board of directors.

Dr. R. H. Ulrich, Development Department, General Tire and Rubber Company, Akron, recently sailed for Europe on the Vulcania for a two-month visit abroad. He will spend several weeks in Italy.

Paul Dietz, B. F. Goodrich representative in China, now visiting the United States, discussed the rapid developments taking place in Chinese industrial and social life before a meeting of the Rotary Club of Sandusky, Ohio, on April 24.

Harold James Page, Controller of Agricultural Research for Imperial Chemical Industries, Ltd., of London, England, has been offered the post of Director of the Rubber Research Institute of Malaya, which he is expected to accept shortly. The vacancy was created by the retirement of Lt.-Col. B. J. Eaton.

W. D. Stewart, member of the B. F. Goodrich research staff, left Akron on May 2 bound for Kuala Lumpur, F.M.S., where he will be stationed at the Goodrich Malayan research laboratories for the next several years.

J. C. Clinefelter, 239 North Highland Avenue, Akron, has been appointed sales representative for the Black Rock Mfg. Company, of Bridgeport, Conn. He will cover the Michigan, Indiana, Illinois and Wisconsin territories. Mr. Clinefelter is also western agent for John Royle and Sons.

Kenneth J. Rupprecht, of the Providence, R. I., laboratories of U. S. Rubber Products, Inc., sailed for Malaya recently, where he will serve as first assistant engineer at the U. S. Rubber Plantation's laboratories for the next three years.

C. Edward Murray, president, Crescent Insulated Wire & Cable Company, Trenton, N. J., is recovering from injuries received in an automobile accident at Union, N. J. on April 13. He suffered a fractured collarbone and two fractured ribs.

William Holt, sales representative of John Royle & Sons, Paterson, N. J., who has been visiting California for the past several months, is reported on his way back to the East. He recently suffered a fractured vertebra but advises that he is fully recovered.

Bowers Made General Manager

Archibald C. Bowers, vice-president in charge of manufacturing for the Pennsylvania Rubber Company, Inc., of Jeannette, Penna., was recently elected vice-president and general manager of that company. He has held the former post since 1928 when he first joined Pennsylvania Rubber. Born in 1887, Mr. Bowers entered the rubber industry shortly after the war, during which he served in the navy, later becoming associated with the Inland Rubber Company, at Chicago. When he left Inland to accept a post with the Mason Tire and Rubber Company to operate their Bedford, Ohio, factory, he held the position of general superintendent. In 1925 he was elected vice-president in charge of manufacturing of both the Bedford and Kent, Ohio, plants of Mason Tire, as well as a director. He remained with Mason until 1928 when he joined the Pennsylvania Rubber Company. Mr. Bowers is a Mason, indulges in fishing, and lives at Greensburg, Pennsylvania.

Taylor Made Treasurer

C. E. Taylor, associated with the National Rubber Machinery Company since its formation, has been made treasurer of that company. He was employed in the accounting division of the Akron Rubber Mold Company at the time of the amalgamation of four mold and machinery companies into the National concern. Prior to that connection, Mr. Taylor was connected with the cost department at Firestone.

Leo F. Mullen, 2563 Fenwick Road, Cleveland Heights, Ohio, has been appointed to handle the middle-western sale of the new Thiokol synthetic rubber printing plate and plastic molding powders. He was formerly associated with the Synthane Corporation and the Sherwin-Williams Company.

Julius Muehlstein, of H. Muehlstein and Company, New York City, was named a member of a committee to investigate compensation insurance rates in the waste material trade last month.

G. C. A. Hantelman, instructor of the Goodyear Industrial University, addressed the members of the Ohio Section of the Society for the Promotion of Engineering Education on April 18 at its annual meeting held in Cleveland.

W. J. Lattimore, formerly microscopist with V. L. Smithers, Inc., consulting chemists at Akron, and later associated with the C. K. Williams Company, of Easton, Penna., is now with the Grasselli Chemical Co., Cleveland.

Bruck Elected Treasurer

P. E. L. Bruck, sales manager of the Revertex Corporation of America, New York City, was elected treasurer of the company last month. He has been associated with Revertex since 1930 when

P. E. L. Bruck

he joined the company as office manager, being appointed sales manager shortly thereafter. Mr. Bruck was born in Frankfurt-am-Main, Germany, in 1901, attending high school and college in that city. He was graduated from the Woehler Real Gymnasium in 1920 and entered the employ of Metallgesellschaft, A.G. in his home town. For ten years he worked in eight different departments of this company, and left in July, 1930, to enter the services of Kautschuk-Gesellschaft m.b.H., the Continental agent of Revertex, Ltd., London, England. For three months he divided his time between the laboratory and the commercial department of the company and came to the United States in September, 1930.

G. L. Matthias, general superintendent, mechanical goods division, B. F. Goodrich Company, Akron, was the principal speaker at a meeting of the Columbus Chapter of the National Association of Cost Accountants held on April 18 at the Columbus Athletic Club.

Fred C. Batchellor, formerly with the General Atlas Carbon Company and the Vultex Chemical Company, is now associated with William J. Frye and Company, 19 Rector Street, New York City, dealers in investment trust securities.

Norman L. Smith, vice-president, Binney and Smith Company, New York City, was a passenger on the Puerto Rican Clipper of the Pan American Airlines which recently crashed in the harbor of Port of Spain, Trinidad. Although there were several fatalities, Mr. Smith escaped with only slight injuries.

P. L. Dildine, manager, factory standards, B. F. Goodrich Company, Akron, was one of a group of Goodrich executives attending sessions of the annual meeting of the American Management Association held in Cleveland mid-April.

Obituaries

Ernest O. Dieterich

Dr. Ernest O. Dieterich, manager of physical research for the B. F. Goodrich Company, died at his home on Ecton Road in Akron on April 25 at the age of 46. He had been inactive since January of this year as the result of a heart ailment. Born in Dubuque, Iowa, in September, 1889, Dr. Dieterich matriculated at the Iowa State University where he received several degrees. After being graduated he served as an instructor in physics at the Iowa State Teachers College and at the University of Minnesota, returning to Iowa State University in 1918 as associate professor of physics. In 1919 he joined the research division of Goodrich and was made manager of physical research in 1926, a post he retained until his death. Dr. Dieterich was internationally known for his contributions on the treatment and vulcanization of rubber and was best recognized for his improvement of the plastometer. His technical papers included many on the optical, electrical and mechanical properties of selenium, accelerated aging of hard rubber compounds, etc. He was very active in professional engineering organizations and was a member of the American Physical Society, the Optical Society of America, and others. He was also a member of Sigma Xi. Pallbearers at the funeral services held at the Church of Our Saviour on April 27 included J. W. Schade, Goodrich director of research, Harold Gray, of the Goodrich research staff, Dr. W. M. Jones, and other close associates. Burial was made at Cedar Rapids, Iowa, his former home. He leaves a widow and a son.

Frederick F. Schaffer

Frederick F. Schaffer, 82, one of the pioneers of the rubber industry in New Jersey and Connecticut, and connected with rubber manufacturing for 60 years, died April 26 at Waterbury Hospital, Waterbury, Conn., after an illness of two weeks. The last 52 years of his activity in the industry were spent in Naugatuck, Conn., and he was credited with having contributed greatly to making that community one of the rubber centers of the world.

Born in Prussia, June 12, 1853, Mr. Schaffer was brought to America by his parents when one year old. The family settled in Milltown, N. J., and Mr. Schaffer was educated in the public schools of that town and New Brunswick, N. J. In 1867, at the age of 14, he obtained work with the New Brunswick Rubber Company. After six years with that plant he transferred to the New Jersey Rubber Shoe Company and when the factory was destroyed by fire in 1876 he removed to Naugatuck and was placed in charge of the boot and shoe department of the Goodyear India Rubber Glove Company.

In 1885 Mr. Schaffer was placed in charge of operations of all departments of the G. I. R. Glove plant. He was elected secretary in 1905 and a director in 1913. In May, 1915, he was elected president of the G. I. R. Glove and less than two years later was chosen director and president of the Goodyear Metallic Rubber Shoe Company. He held these positions until 1928 when the plants were taken over by the United States Rubber Company.

Mr. Schaffer was active in Naugatuck political, fraternal and banking affairs. He was married three times and is survived by his third wife, three daughters, one son, and a sister. His son, Frederick W. Schaffer, is now superintendent of the Naugatuck rubber plants.

S. S. White, Jr.

Samuel Stockton White, Jr., associated with the S. S. White Dental Manufacturing Company, died at his home in Philadelphia, on April 16, after an illness of more than a year. He was 81 years old. For sixty years he had been associated in either an executive or an advisory capacity with the White company, which manufactures a line of dental rubbers, as well as mechanical rubber goods. The company was founded by his father in 1844. Born in Philadelphia, Mr. White attended the public schools and joined his father's company when a young man. He was appointed president in 1912 and served in that capacity until his retirement from active business in 1915. He remained a member of the directorate, however, until 1926. Although he was not officially connected with the company in recent years he maintained a close association with it in an advisory capacity. Mr. White had an earned reputation as an extensive traveler, having made about 40 trips abroad. Funeral services were held on April 18. One son survives.

Charles F. Devine

Charles F. Devine, associated with the rubber industry for more than 25 years, died on March 25 from a heart attack at the age of 55. Born in Boston in 1881, he matriculated at Harvard University, and after a few years with the Walworth Mfg. Company he joined the Habirshaw Cable and Wire Company, Yonkers, N. Y., in 1911, where he remained for nineteen years as chief chemist in charge of rubber development. In 1930 he joined E. T. Trotter and Company, Brooklyn, N. Y., and at the time of his death was associated with the Philadelphia Insulated Wire Company, at Philadelphia. Interment was in the Forest Hills Cemetery, in Boston.

Dr. Ugo Pestalozza

Dr. Ugo Pestalozza, director of latex research for the Societa Italiana Pirelli, Milan, Italy, died on March 15 after a short illness. He was 51 years old. Dr. Pestalozza was widely known as the discoverer of the process for heat sensitizing latex, one of the major developments in the direct application of latex, and is credited with the process for making inner tubes from latex. Born in Italy, he studied chemistry at the University of Bologna, and was graduated in 1907, remaining with the University for three years as an assistant professor. In 1910 he joined Pirelli and was employed in the general chemical laboratory. A few years later he was appointed manager of the department for thread, proofing and sanitary articles. In 1923 he was placed in charge of a special research laboratory where he experimented with latex almost exclusively until his untimely death. Dr. Pestalozza held many rubber and latex patents, and was a constant contributor to world-wide technical journals.

Henry A. Morss

Henry A. Morss, president, treasurer and a director of the Simplex Wire and Cable Company, Cambridge, Mass., died on May 6 at the Phillips House, Boston, at the age of 65, after a short illness. He had been connected with insulating wire manufacture for a number of years, and became president of Simplex on the death of Everett Morss in February, 1934. In addition to the presidency of Simplex, Mr. Morss was vice-president of the Hub Wire Cloth and Wire Company, a member of the executive committee of the Massachusetts Institute of Technology, where he formerly served as treasurer, and a life member of the M.I.T. Corporation. He had also served as president of the Boston Children's Friend Society, trustee of the Morss Real Estate Trust and trustee of Radcliffe College. He is survived by his widow, three sons, two daughters and a brother.

Wallace Henry Paull

Wallace Henry Paull, famous British rubber technologist, well-known for his contributions to the development of pneumatic tires, died last month at his home in Bontdru, Wales, at the age of 65. Born in Aberystwyth, Mr. Paull went to Birmingham in 1892 where he became associated with Dunlop Rubber Company, an association which lasted for 30 years, many of which were spent in the capacity of technical director. At the time of his death he was acting in an advisory capacity to the company, especially with regard to the development of new processes of direct manufacture from latex. He is also credited with bringing about the standardization of tire sizes in Great Britain. In recent years he perfected the high speed tires used by such notables as the late Sir Henry Segrave, Sir Malcom Campbell,

and others. In 1933 Mr. Paull was presented with the Colwyn gold medal of the Institution of the Rubber Industry.

James G. Evans

James G. Evans, whose death on April 4 was mentioned briefly in the preceding issue, had a long record of service with the Republic Rubber Company of Youngstown, Ohio. He originally joined Republic in 1913 and was gradually advanced to the position of efficiency engineer by 1919. From 1919 to 1925 he was engaged by other interests in an engineering consulting capacity, returning to Republic late in 1925 as assistant chief engineer. In 1929 he was appointed chief engineer, a post he held until his death from a heart attack. Among other affiliations, Mr. Evans was a member of the American Society of Mechanical Engineers and of the Ohio Society of Professional Engineers.

Walter H. Worthington

Walter H. Worthington, a veteran department manager in the Miller Rubber division of B. F. Goodrich, died at his home at 727 City View Avenue in Akron on April 19 at the age of 50. Death followed a short illness of pneumonia. A former resident of Columbus, Mr. Worthington had lived in Akron for the past thirty years, the last sixteen of which were spent with Miller Rubber. He was a member of the Goodrich Foremen's Club and the Goodrich Ten Year Club. Funeral services were held on April 22 with burial in Greenlawn Cemetery, Akron. He is survived by his widow, a son and a daughter.

Victor J. Ahlgreen

Victor J. Ahlgreen, employed in the experimental department of the Goodyear Tire and Rubber Company, died on April 27, at the Akron City Hospital from a sudden attack of pneumonia. He was 53 years old. Funeral services were held at the Viall-Kesler funeral home on April 22. He leaves a widow, a son and a foster daughter.

Fred H. Ayers

Fred H. Ayers, former vice-president of the old Fisk Rubber Company, with which he was connected for twenty years, died at the age of 75, in Pittsfield, N. H., on April 21. During his long connection with Fisk, he was stationed at the Chicopee Falls, Mass., headquarters. In recent years, he had been engaged in the hotel business in New Hampshire.

George W. Prall

George W. Prall, former sales manager of the Lambertville Rubber Company, Lambertville, N. J., died at his home in that town on April 25 at the age of 76. He was active in both civic and fraternal affairs for many years, and was a member of the Masonic fraternity. He is survived by a widow and sister. Burial was in Lambertville.

SIR HERBERT WRIGHT TALKS ON RESTRICTION

Sir Herbert Wright, well known English rubber executive, in addressing a meeting of shareholders of the Java Amalgamated Rubber Estates in London (England) early last month, stated that the plantation industry has reached a stage in its development which requires careful treatment if it is to be of permanent value. The regulation of production from 8,000,000 acres now planted and further exploitation of new land may demand a scheme on a basis somewhat different from that now in operation.

Stressing the necessity of continuing some scheme of regulation, Sir Herbert pointed out three pertinent reasons why such continuation was essential, as follows:

(1) The East is overplanted with rubber; (2) there is no evidence that the world will be able to consume an annual minimum crop of 1,500,000 tons of rubber after 1938 when the present scheme comes to an end; (3) almost every manufacturing country in the world is endeavoring to make itself partially independent of present sources of supply, either by cultivating rubber-yielding plants indigenous to each country, or perfecting processes for the manufacture of substitutes and synthetic rubbers; especially is this so in the United States, Germany, and Soviet Russia.

In concluding his address, Sir Herbert stated that "it would be a serious indictment against our system of private enterprise if, with all our experience and resources, we were unable to formulate a scheme of regulation which would prevent waste of valuable labor and avoid the loss of considerable capital sums. Every effort should be made by research and propaganda to increase the demand for rubber and to organize the whole of our business in order that we may preserve an industry which has rendered world-wide service and is, at present, essential for the development of many commercial enterprises."

Announce Wage Increases

Immediately following the raising of prices on all tire lines on May 4, both B. F. Goodrich and the Firestone Tire and Rubber Company, announced wage increases to all employees effective immediately. Firestone officials disclosed that 10,000 factory workers would receive increases of 5 to 10%; Goodrich's statement made no mention of the amount of the increase to be granted to 12,000 workers. Goodyear authorities announced a 5 to 10% wage increase a day or two later.

INDIA TIRE COMPANY MAY SOON LIQUIDATE

Following the failure of a reorganization move to win sufficient support from creditors and stockholders at a hearing before Harry L. Snyder, referee in bankruptcy, in Akron, held on May 4, the special master indicated that he would recommend liquidation of the India Tire Company, of Mogadore, in his report to Judge Samuel H. West in the Federal Court at Cleveland. A hearing before Judge West cannot be held earlier than May 24.

It was pointed out that acceptance of the special master's recommendation for liquidation of India Tire would throw the company into the bankruptcy court. According to Donald Gottwald, India Tire attorney, the company's assets are in excess of $900,000, while it owes $265,000 in secured and unsecured claims, $190,000 to the Reconstruction Finance Corporation which is secured by real estate and chattel mortgages, and $127,000 to the Bureau of Internal Revenue for unpaid excise taxes.

Late in March, India Tire filed an application for reorganization under Section 77-B of the Federal Bankruptcy Act. The plan filed with the court on April 6 called for a 25% compromise on the excise taxes due the government, with general creditors being asked to accept Class A preferred stock in exchange for their debts. The plan required approval of 66% of all creditors. The factory at Mogadore has been closed since the last week in March.

Rubber Quota Increased

In a surprise move, the International Rubber Regulation Committee, meeting in London (England) on April 28 set the exportable quota of rubber for the second half of 1936 at 65% of basic quotas which applies to all countries participating in the restriction scheme with the exception of Siam and Indo-China which are permitted to export rubber up to the full amount of their respective basic quotas. As a result of this decision the permissible production of rubber for the second half of this year will amount to approximately 30,000 more tons than that allowed in the first half, the total 1936 permissible production being set at 764,078 tons including the 1935 carry-over. It is believed in some quarters that the move was an effort by the committee to halt the bullish sentiment which has been increasingly felt in the various crude rubber markets.

R. S. L. Enlarges Office

The Rubber Service Laboratories Division, Monsanto Chemical Company, has enlarged its offices in the Second National Building, in Akron, to enable it to better accommodate its growing staff of employees.

TOY SHOW INDICATES TRADE IMPROVEMENT

Indicating a definite improvement in the toy and game industry, more than 2500 buyers attended the 1936 American Toy Fair, sponsored by the Toy Manufacturers of the U. S. A., held from April 20 to May 2, at the Hotel McAlpin and the Toy Center, 200 Fifth Avenue, in New York City. Approximately 10,000 different types of playthings were on exhibit.

Four rubber manufacturers showed their wares in display rooms at the McAlpin: Seiberling Latex Products Co., the C. B. Webb Co., Pennsylvania Rubber Co., and the Sun Rubber Co. Exhibits at the Toy Center included those sponsored by the Auburn, Miller, Barr and Schavoir Rubber companies. Additional rubber exhibits were displayed in offices in New York City other than the two locations mentioned.

A complete range of toys and novelties was displayed by Seiberling Latex, including the Walt Disney line of rubber characters. New items included the "Sure-Catch" sponge rubber ball, a solid sponge rubber baseball, both a molded and inflatable Donald Duck, and others. According to Don Glass, of the Akron sales staff, interest exhibited at the Fair indicates a highly profitable season for rubber toy manufacturers.

All-rubber cars, including a new stream-lined model, featured the Sun Rubber exhibit, eight new numbers in all being shown. In addition to the cars, the regular line of rubber dolls, teething rings, nursing bottle caps, miniature hot water bags, etc., were on display. A dressable doll was another new feature being shown. D. N. Briggs, manager of the New York office was in attendance, while T. W. Smith, Jr., Sun sales manager, spent most of the two weeks interviewing customers. He predicted "increased business" for the company as a result of the exhibition.

Mrs. C. B. Webb was in charge of the Webb display which included the wide range of valve and health balls featured by the company, all of the latest designs being shown. The Pennsylvania Rubber exhibit, in charge of Tom Roberts, featured all-color balls, Aerolux hand balls, tennis balls, etc.

At the Toy Center, Auburn Rubber had on display its new line of solid rubber toys consisting of miniature soldiers, sailors, circus folk, animals, and other figures, as well as miniature automobiles, bunnies, etc. Many of the figures are boxed in sets.

Miller Rubber displayed its latest designs in rubber balls, balloons, novelties, etc., the feature of the new balls being a finish resembling enamel accomplished by using a special transparent lacquer on red stock. The new coating is said to extend the life of the balls.

Schavoir Rubber showed several new novelties including a green-colored frog the hind legs of which act as a spring when folded under the body of the novelty. Other items included the popular Segar characters of "Popeye," "Olive Oyl," and "Wimpy." Rubber balloons, balls, knives, bones, cars, and other items, were displayed by Barr Rubber, William J. Canary, Eastern division manager, reporting "a definite improvement in sales over the 1935 Fair."

In the display rooms of Edgar M. Clark, New York sales representative, at 1107 Broadway, the latest items in the lines of the Maxwell Rubber and Rider Rubber companies were shown including ABC blocks. "Tamby" toys teething rings and animals. In the same building the "Bild-O-Brik" sets of interlocking rubber bricks manufactured by the Rubber Specialties Company were on display in the rooms of Block House, Inc.

Practically every representative of a rubber manufacturer interviewed by a correspondent of THE RUBBER AGE expressed optimism for the future of the rubber toy trade based on sales and contacts made during the two weeks of the American Toy Fair.

Increased Demand

According to a recent issue of *Business Week* fifty kinds of equipment and material are in heavy demand by localities affected by the flood disasters including rubber hose and belting, brake-lining and rubber-covered wire. From other sources it is indicated that an equal demand exists for rubber electrician's gloves and other styles, rubber boots and shoes, and other types of rubber products. The glove factories, in particular, report exceptional activity.

Firestone to Exhibit

The Firestone Tire and Rubber Company, Akron, has signed a contract to construct an exhibit covering more than 180,000 square feet, the largest amount of space contracted for by any one company in the Great Lakes Exposition which opens on June 27. To be one of the largest outdoor displays erected in the mid-West, the exhibit will feature the "singing" fountains first displayed at Chicago's World Fair. A central building will house novel scientific features, according to Firestone officials.

Moving to Larger Quarters

The offices of A. Schulman, Inc., of Akron, dealers in crude and scrap rubber and hard rubber dust, have been moved from the Akron Savings and Loan Building to 577 South High Street where the company now has greatly enlarged space and facilities for servicing its customers. The new offices are in the same building with the Schulman warehouse, thus enabling closer contact and more prompt action on orders and shipments.

TIRE MANUFACTURERS INCREASE ALL PRICES

As expected, increases on all tire lines were announced on May 4 by leading tire manufacturers in and around Akron, with announcements made by U. S. Rubber and the Lee Tire and Rubber Company that they would also increase. The tire producers making the initial announcement included Goodyear, Goodrich, Firestone, General, Mohawk, Seiberling, India Tire and the Falls Rubber Company.

Raised from 5½ to 13% the new tire prices represent an average increase of 10%, the specific increases being 11% on first-line tires, 13% on second-line, 5½% on third-line, and 7½% on fourth-line. Attributed to increasing costs of raw materials, the rise is the first change in general prices since the cessation of the disastrous price-cutting war of 1935 ended by mutual consent of the tire manufacturers.

The Lee Tire and Rubber Company notified its dealers that its special discount of 10% would be eliminated as of May 4 and that its discounts to commercial accounts would be shortened.

Giant Zeppelin Planned

Plans calling for a new giant zeppelin, larger than Germany's Hindenburg, have been drawn, it was disclosed by President Paul W. Litchfield, of Goodyear, late last month. Now in the blue-print stage, the planned zeppelin would be 850 feet long and 145 feet in diameter, 75 feet longer than the Hindenburg or the U. S. S. Akron. Mr. Litchfield's revelation, leaders of the industry have pointed out, indicates that Goodyear-Zeppelin has probably received some definite encouragement from either official or commercial sources. Upon being queried as to further plans for the new ship, Dr. Karl Arnstein, vice-president and chief engineer of the Goodyear-Zeppelin Corporation, stated that Mr. Litchfield's statement was "too early."

Monarch Rubber Expanding

In order to broaden and enlarge the range of articles it manufactures, the Monarch Rubber Company, Inc., of Baltimore, Maryland, makers of rubber heels, soles and kindred lines, has installed additional equipment at its factory at 3520 Philadelphia Road. Sol Schwaber and Bernard Polan are president and vice-president, respectively, of the company.

Pfaltz and Bauer Move

Effective May 1, the general offices of Pfaltz and Bauer, Inc., well known importers of industrial chemicals, will be in the Empire State Building, in New York City, where a permanent display of scientific instruments will be on exhibit. Warehouses will be maintained at 300 Pearl Street and 12 Peck Slip, both in New York.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, MAY 9, 1936

Crude Rubber

AFTER climbing to a 16.10 quotation on the Exchange, the highest level for spot rubber since September, 1934, prices declined steadily from April 15 with 15.31 quoted on May 7 and 8. The decline was due to several disturbing factors, particularly renewed nervousness with regard to the Akron labor situation. The unexpected 5% increase in permissible exports granted by the International Rubber Regulation Committee caused a decline in prices, buying by manufacturers, however, being sufficiently impressive to halt the decline. The announcement of increased tire prices on May 4, followed by the decision of the tire manufacturers to increase wages by 5 to 10%, had little effect on the market which is particularly concerned at the moment with financial conditions in France and possible monetary changes. Despite these conditions, most of the underlying factors are said to be in favor of holders eventually, if not at the present. Quotations in the outside market, Exchange, London and Singapore, follow:

As of May 9

Plantations—

Ribbed Smoked Sheets—			
No. 1 Spot	—	@	.15 3/8
July-September	—	@	.15 5/16
October-December	—	@	.15 1/4
No. 2	—	@	.15 3/16
No. 3	—	@	.15 1/4
No. 4	—	@	.15 3/16
Thin Latex Crepe	—	@	.15 1/4
Thick Latex Crepe	—	@	.15 3/16
Brown Crepe, No. 1	—	@	.15 3/8
Brown Crepe, No. 2	—	@	.15 5/16
Amber Crepe, No. 2	—	@	.15 3/8
Amber Crepe, No. 3	—	@	.15 5/16
Amber Crepe, No. 4	—	@	.15 5/16
Brown Crepe, Rolled	—	@	.15

Latex—

Liquid Latex, per gal.	.60	@	.61

Paras—

Up-River, fine	—	@	.17 1/2
Acre Bolivian, fine	—	@	.17 3/4

Balata—

Block, Ciudad	—	@	.32

LONDON MARKET

Standard Smoked Sheets—Buyers—May 9

May	—	@	7 1/4d
July-September	—	@	7 3/8d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—May 9

May	—	@	7 3/8d
July-September	—	@	7 1/4d

Reclaimed Rubber

Prices have gone up on several grades of reclaim since our last report, with the increase credited to the advancing costs of raw materials. Business is spotty although fairly active. Reclaimers report a continued optimism for the future, the automobile outlook being especially promising. Current quotations follow:

High Tensile

Super-reclaim, black	.08 3/4	@	.09
High Tensile Red	.07 3/4	@	.08

Shoe

Unwashed	.06 1/2	@	.06 3/4
Washed	.08	@	.09

Tube

No. 1 (Floating)	.14	@	.14 1/4
No. 2 (Compounded)	.07 1/4	@	.07 1/2
Red tube	.07 1/4	@	.07 3/4

Tires

Black	.05	@	.05 1/4
Black, selected tires	.05 1/4	@	.05 1/2
Dark Gray	.06 1/2	@	.06 3/4
White	.10	@	.10 1/4
Truck, Heavy Gravity	.05 1/2	@	.06
Truck, Light Gravity	.06	@	.06 1/4

Miscellaneous

Mechanical blends	.03 1/2	@	.04 1/2

Scrap Rubber

(Delivered Akron Mills)

Business continues fair with stock accumulations being rapidly absorbed by reclaimers. Prices held steady last month though slight decreases are reported in a few grades. With crude rubber prices holding at high levels, dealers view the future with optimism. Current quotations follow:

(Prices to Consumers)

Auto tire peelings	ton 17.50	@	19.00
Mixed auto	ton 8.50	@	10.00
Beadless tires	ton 13.50	@	15.00
Clean solid truck tires	ton 27.50	@	30.00
Boots and shoes	ton 17.50	@	20.00
Arctics, untrimmed	ton 12.50	@	15.00
Inner tubes, No. 1	lb. .09	@	.10
Inner tubes, No. 2	lb. .04 1/4	@	.04 1/2
Inner tubes, Red	lb. .04 1/4	@	.04 1/2

Cotton

Cotton prices have moved in a narrow range since our last report, showing a slight upward tendency in mid-April due to growing uncertainty as to the new crop prospects and the inability of the cotton trade to buy desirable styles of cotton in the South. In the latter part of the month prices eased about 20 points, dropping from a high for the period of 11.88 on April 23 to the low of 11.55 on April 30. This decline was due to favorable rains in the Western section of the country, among other factors. Prices have been hovering between 11.61 and 11.67 this past week, with slight declines anticipated for the immediate future. The 12-cent loan releases now total approximately 400,000 bales. The Government has announced that it intends to sell 1,000,000 bales by September 1. Southern mills are curtailing production somewhat, but general action is not expected until it is known whether Congress will impose taxes on the cotton mills or not. Quotations for middling uplands on the New York Cotton Exchange follow:

	April 8	May 9		
	Close	High	Low	Close
May	11.30	11.60	11.58	11.60
July	11.03	11.26	11.24	11.25
October	....	10.30	10.27	10.28

Tire Fabrics

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb. .29	@	.29 1/2
Peeler, carded, 23/4/3	lb. .30	@	.30 1/2
Peeler, carded, 15/3/3	lb. .27	@	.27 1/2
Peeler, carded, 13/3/3	lb. .26	@	.26 1/2
Egyptian, carded, 23/5/3	lb. .43	@	.43 1/2
Egyptian, combed, 23/5/3	lb. .48	@	.48 1/2
CHAFERS			
Carded, American, 1 1/16"	lb. .29 1/2	@	.30
Carded, American, 1"	lb. .27 1/2	@	.31
LENO BREAKER			
Carded, American, 1 1/2"	lb. .30 1/2	@	.31
Carded, American, 1"	lb. .28	@	.28 1/2

Sheetings

48x40	36 in.	5.50	lb.	—	@ .04 1/2
40x40	36 in.	6.15	lb.	—	@ .04
40x36	36 in.	6.50	lb.	—	@ .03 3/4
48x48	40 in.	2.50	lb.	—	@ .08 5/8
48x48	40 in.	2.85	lb.	—	@ .07 5/8
56x60	40 in.	3.60	lb.	—	@ .07 5/8
48x44	40 in.	3.75	lb.	—	@ .06 5/8
44x40	40 in.	4.25	lb.	—	@ .05 3/4

Ducks

Enameling	lb. .28	@	.32
Belting and Hose	lb. .26 1/4	@	.26 1/2
Single filling, A grade	lb. .14 3/4	@	—
Double filling	lb. .14 3/4	@	—

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM APRIL 8 TO MAY 9

Date		Spot	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Apr.	8	15.93	15.95	15.99	16.04	16.10	16.14	16.19	16.23	16.27	16.32	16.35	16.38	16.41		95
	9	16.00	15.98	16.02	16.08	16.14	16.18	16.22	16.26	16.30	16.34	16.37	16.40	16.44		83
	10	....	....	....	....	....	....	....	....	....	....	....	....	....		...
	11	....	....	....	....	....	....	....	....	....	....	....	....	....		...
	12	....	....	....	....	....	....	....	....	....	....	....	....	....		...
	13	16.06	16.04	16.08	16.13	16.19	16.23	16.28	16.32	16.36	16.40	16.43	16.47	16.51		213
	14	16.06	16.04	16.08	16.13	16.19	16.24	16.29	16.33	16.38	16.43	16.46	16.49	16.53		151
	15	16.10	16.06	16.10	16.15	16.20	16.26	16.32	16.35	16.39	16.43	16.47	16.51	16.55		199
	16	16.06	16.01	16.05	16.11	16.17	16.22	16.28	16.32	16.36	16.40	16.43	16.47	16.51		160
	17	16.10	16.05	16.09	16.14	16.19	16.24	16.29	16.33	16.37	16.41	16.45	16.49	16.53		45
	18	16.06	16.01	16.05	16.11	16.17	16.22	16.27	16.31	16.35	16.39	16.43	16.47	16.52		30
	19	....	....	....	....	....	....	....	....	....	....	....	....	....		...
	20	16.00	15.98	16.02	16.08	16.13	16.18	16.23	16.29	16.32	16.36	16.41	16.43	16.46		76
	21	15.93	15.91	15.95	16.00	16.06	16.12	16.18	16.21	16.25	16.29	16.32	16.36	16.40		72
	22	15.93	15.86	15.90	15.95	16.00	16.05	16.10	16.14	16.18	16.22	16.25	16.29	16.33		99
	23	15.88	15.84	15.88	15.93	15.99	16.04	16.09	16.13	16.17	16.21	16.25	16.29	16.33		166
	24	16.00	15.88	15.92	15.98	16.05	16.10	16.15	16.19	16.23	16.27	16.31	16.35	16.40		140
	25	16.00	15.94	15.98	16.04	16.10	16.16	16.22	16.25	16.29	16.33	16.36	16.40	16.44		65
	26	....	....	....	....	....	....	....	....	....	....	....	....	....		...
	27	15.96	15.89	15.93	15.99	16.05	16.10	16.15	16.19	16.23	16.27	16.30	16.34	16.38		104
	28	15.81	....	15.70	15.75	15.81	15.86	15.92	15.95	15.99	16.03	16.06	16.10	16.14		392
	29	15.93	....	15.90	15.93	15.97	16.01	16.06	16.09	16.12	16.16	16.19	16.23	16.27		432
	30	15.87	....	15.82	15.86	15.90	15.94	15.98	16.01	16.05	16.10	16.13	16.17	16.21		130
May	1	15.87	....	15.83	15.87	15.91	15.96	16.02	16.05	16.08	16.12	16.15	16.19	16.23	16.26	74
	2	15.78	....	15.74	15.78	15.82	15.86	15.91	15.94	15.97	16.00	16.03	16.07	16.11	16.15	13
	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
	4	15.73	....	15.66	15.71	15.77	15.81	15.86	15.89	15.93	15.97	16.00	16.04	16.08	16.12	149
	5	15.68	....	15.63	15.67	15.72	15.75	15.79	15.82	15.86	15.90	15.94	15.98	16.03	16.07	92
	6	15.62	....	15.52	15.58	15.64	15.68	15.73	15.76	15.80	15.84	15.88	15.92	15.96	16.00	165
	7	15.31	....	15.25	15.30	15.36	15.40	15.45	15.48	15.52	15.56	15.59	15.63	15.67	15.71	301
	8	15.31	....	15.25	15.31	15.38	15.43	15.48	15.51	15.54	15.57	15.61	15.65	15.69	15.73	232
	9	15.34	....	15.29	15.35	15.42	15.46	15.51	15.54	15.58	15.62	15.66	15.70	15.74	15.78	41

Rubber CHEMICAL Markets

NEW YORK, MAY 10, 1936

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic			
A-1 (Thiocarbanilid)	lb.	.21 @	.25
A-5-10	lb.	.33 @	.36
A-7	lb.	.53 @	.65
A-11	lb.	.60 @	.75
A-16	lb.	.55 @	.65
A-19	lb.	.56 @	.75
A-32	lb.	.70 @	.80
A-17	lb.	— @	—
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	— @	—
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.44 @	.47
Diphenylguanidine	lb.	.35 @	.37
Ethylidene aniline	lb.	.45 @	.47½
Formaldenyde aniline	lb.	.37½ @	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lead Oleate, No. 999	lb.	.11 @	—
Witco	lb.	.11 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsolene	lb.	3.55 @	4.00
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.55 @	1.90
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.21 @	.25
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.62 @	1.00
Ureka B	lb.	— @	—
Ureka C	lb.	.58 @	.69
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.48 @	.60
Zimate	lb.		
Inorganic			
Litharge, domestic	lb.	.06½ @	.07
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.37 @	.39
Ultramarine	lb.	.15 @	—
Browns			
Sienna, Italian	lb.	.06 @	'13
Umber, Turkey	lb	.04 @	.04½
Greens			
Chrome, light	lb.	.20 @	.30
medium	lb.	.21 @	.31
Chromium Oxide, bbl.	lb.	.19 @	.20
Guignet's Green	lb.	.70 @	—
Reds			
Antimony			
crimson, 15/17	lb.	.48 @	—
sulfur, free	lb.	.48 @	.60
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼ @	—
Whites			
Cryptone CB, No. 21	lb.	.06 @	.06¼
Cryptone, No. 19	lb.	.06 @	.06¼
Cryptone, ZS-20	lb.	.10½ @	.10¾
Cryptone, ZS-86	lb.	.10½ @	.10¾
Lithopone			
Albalith, black label—11	lb.	.04½ @	.04¾
Azolith	lb.	.04½ @	.04¾
Rayox	lb.		
Titanium oxide	lb.	.17 @	.18½
Titanox B	lb.	.06 @	.06¼
Titanox C	lb.	.06 @	.06¼
Zinc Oxide—American Process			
American Azo			
ZZZ (lead free)	lb.	.05 @	.05¼
ZZ (leaded)	lb.	.04⅞ @	.05⅛
Anaconda, lead free	lb.	.05 @	.05¼
Horsehead Lead Free Brand:			
Special—3	lb.	.05 @	.05¼
XX Red—4	lb.	.05 @	.05¼
XX Red—72	lb.	.05 @	.05¼
XX Red—78		.05 @	.05¼
XX Red—103	lb.	.05 @	.05¼
U. S. P.—X, bbls.	lb.	.08 @	.08¼
Kadox, black label—15	lb.	.05 @	.05¼
Blue label—16	lb.	.05 @	.05¼
Red label—17	lb.	.05 @	.05¼
St. Joe, black label	lb.	.05 @	.05¼
green label	lb.	.05 @	.05¼
red label	lb.	.05 @	.05¼
Zinc Oxide—French Process			
Florence White seal—7 bbls.	lb.	— @	.06¾
Green seal—8	lb.	.06 @	.06¼
Red seal—9	lb.	.05½ @	.05¾
Yellows			
Chrome	lb.	.11 @	.12
Ocher, dom. med.	lb.	.02¼ @	—

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535 @	.0825
Bone, powdered	lb.	.05½ @	.12½
Carbon, compressed	lb.	.0535 @	.0825
uncompressed	lb.	.0535 @	.0825
"Certified," Cabot	lb.	.0535 @	.0825
Spherons	lb.	.0535 @	.0825
"Disperso"	lb.	.0535 @	.0825
Drop, bbls.	lb.	.05½ @	.14
"Excello," compressed	lb.	.0535 @	.0825
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.07 @	.12
"Micronex"	lb.	.0535 @	.0825
"Supreme"	lb.	.0535 @	.0825
Thermatomic—"P 33"	lb.	— @	—
"Thermax"	lb.	— @	—
United "Dixie" & "Kosmos"	lb.	.0535 @	.0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½ @	.12
Asbestine	ton	13.00 @	15.00
Barium carbonate (98-100%)	ton	56.50 @	61.50
Barium Dust	lb.	.05 @	.06
Barytes	ton	23.65 @	31.15
Basofor	lb.	.04½ @	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	70.00 @	75.00
Calcene	ton	37.50 @	45.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt	ton	45.40 @	60.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	7.50 @	15.00
Aerfloted, Suprex	ton	8.50 @	10.00
Congaree	ton	9.00 @	—
Dixie	ton		
Dixie, Jr.	ton		
McNamee	ton		
Par	ton		
Tensulite		15.00 @	—
Witco	ton	8.50 @	9.00
Cotton Flock	lb.	.11 @	.15
Glues, extra white	lb.	.28 @	.30
medium white	lb.	.14 @	.19
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesium carbonate	lb.	.08 @	—
Mica	ton	35.00 @	—
Pyrax A	ton	— @	—
Rottenstone (powdered)	lb.	.02½ @	.05
Soapstone, powdered	ton	16.00 @	22.00
Starch, powdered	cwt.	3.19 @	3.39
Talc, domestic	ton	16.00 @	18.00
Whiting, commercial	ton	17.00 @	18.00
Columbia Filler	ton	9.00 @	14.00
English Cliffstone	ton	33.00 @	43.00
Sussex	ton		
Witco	ton	7.00 @	—
Wood Flour	ton	18.00 @	30.00
Zinc Carbonate	lb.	.10½ @	.11
Zinc Stearate	lb.	.26 @	—

MINERAL RUBBER

Black Diamond	ton	27.00 @	—
Genasco, solid (factory)	ton	25.00 @	27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton	31.00 @	—
Pioneer, MR, solid	ton		
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.80
Tonox	lb.	.56 @	.60

SOFTENERS

Acids			
Acetic, 28%, bbls	100 lb.	2.45 @	2.70
glacial, USP, bbls.	100 lb.	14.00 @	—
Nitric, 36 degrees	cwt.	5.00 @	6.00
Sulfuric, 66 degrees	ton	15.50 @	16.50
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08½ @	.11¾
Stearic, double pressed	lb.	.10 @	.11
Stearite	lb.	.08 @	—
Alkalies			
Caustic Soda, 76%	cwt.	3.60 @	3.75
Soda Ash, 58% C.L.	cwt.	2.52 @	—

Oils			
Corn, refined, bbls.	lb.	.11½ @	.11¾
Cottonseed, crude	gal.	.093 @	.10
Cycline Oil	gal.	.15 @	.28
Degras, bbls.	lb.	.05¾ @	.06¾
Fluxrite	lb.	.05½ @	.06½
Palm Lagos	lb.	.05 @	—
Niger	lb.	.04¾ @	—
Para-Flux	gal.	.17 @	—
Petrolatum, light	bbl.	.03½ @	.03⅝
Pigmentaroil, tank cars	gal.	.16 @	—
in drums	gal.	.22 @	.23½
Pine, steam distilled	gal.	.64 @	.65
dest. dist., drums	gal.	.44 @	.46
Rosin Oil, cmpd.	gal.	.40 @	—
Rubtack	lb.	.40 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	.05½ @	—
Witco Softener	gal.	.15 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Wobonite, c.l.	lb.	.05 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.03½ @	—
coal tar	gal.	.07½ @	.08
hardwood	ton	15.00 @	—
pine, 200 lb. gr. wt.	bbl.	4.00 @	4.50
Rosin, grade K, 280 lb.	bbl.	5.90 @	—
Pigmentar, tank cars	gal.	.19 @	—
in drums	gal.	.25 @	.27
R. S. L. Resin	lb.	— @	—
Retort Pine Tar, drums	bbl.	12.00 @	13.00
Solvents			
Acetone, pure	lb.	.11 @	—
Alcohol, denatured, methanol, No. 1 bbls.	gal.	.28 @	.39
Benzene, 90%	gal.	.18 @	.23
Beta-Trichlorethane	gal.	— @	—
Bondogen	lb.	— @	—
Carbon, bisulfide	lb.	.05¼ @	.08
Carbon, tetrachloride	lb.	.05¼ @	.06
Dichlorethylene	lb.	.29 @	—
Dipentene, cml., drums	gal.	.41 @	.44
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05½ @	.06½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.31 @	—
Plastogen	lb.		
Reogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Trichlorethylene	lb.	— @	.09½
Turpentine, spirits	gal.	.50 @	—
dest. dist., drums	gal.	.47 @	—
Waxes			
Beeswax, white	lb.	.34 @	.35
Carnauba, yellow	lb.	.45 @	.46½
Ceresin, white, dom.	lb.	.08 @	.11
Montan, crude	lb.	.10¾ @	.11¾
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03½ @	—
White crude scale 124/126	lb.	.03 @	—
Refined, 122/127	lb.	.04½ @	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
HP	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-H	lb.	— @	—
Flectol White	lb.	— @	—
Flectol B	lb.	— @	—
Neozone	lb.		
Oxynone	lb.	.66 @	.90
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

MOLD LUBRICANTS

Aresklene	lb.	— @	—
Cocoa Soapstock	lb.	.06 @	.08
Dipex	lb.	.06 @	.08
Laurex	lb.	.24 @	.30
Rusco, f.o.b. Nitro	lb.	.12 @	.30
Sericite, f.o.b. N. Y.	ton	65.00 @	—
Soap Tree Bark, cut, sifted	lb.	.06 @	.08
Zip (Mold Wash)	lb.	— @	—

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.26 @	—
Black	lb.	.08½ @	—
White	lb.	.08½ @	.13
Brown	lb.	.08 @	.14
Duphax	lb.	.11 @	—

VULCANIZING INGREDIENTS

Sulfur Chloride, yellow (drs.)	lb.	.03½ @	.04½
Sulfur flour.			
Refined, 100% pure (bags)	cwt.	2.55 @	3.15
Commercial (bags)	cwt.	1.60 @	2.35
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1934	449,322	97,898,519	9.73	23,848	5,770,109	11.23	425,615
1935	453,135	115,299,448	11.36	11,389	3,084,331	12.09	441,746
1934:							
May	48,494	10,001,239	9.21	2,389	544,212	10.17	46,105
June*	47,289	10,747,464	10.14	2,012	501,499	11.33	45,277
July	41,443	9,670,617	10.41	2,366	660,199	13.99	39,077
August	31,531	7,873,690	11.15	1,393	400,433	12.83	30,138
Sept.	31,074	8,293,859	11.92	1,665	474,446	12.72	29,409
Oct.	28,318	8,203,447	12.93	2,058	620,754	13.46	26,260
Nov.	36,325	10,470,076	12.87	1,230	327,672	11.89	35,095
Dec.	17,590	4,974,374	12.62	866	240,780	12.46	16,724
1935:							
Jan.	39,675	10,852,308	12.21	977	278,229	12.72	38,698
Feb.	47,271	12,291,242	11.61	1,845	480,440	11.62	45,426
March	45,350	11,801,152	11.62	1,868	486,379	11.62	43,482
April	39,735	10,096,487	11.34	1,096	285,903	11.64	38,639
May	29,278	7,171,025	10.98	793	202,402	11.39	28,485
June	31,240	7,523,598	10.75	524	153,595	13.10	30,716
July	46,987	11,666,577	11.08	489	132,173	12.06	46,498
August	40,249	10,419,056	11.56	476	130,464	12.23	39,773
Sept.	34,659	8,637,048	11.12	468	120,438	11.48	34,191
Oct.	35,091	8,742,222	11.12	651	188,518	12.92	34,440
Nov.	25,050	6,137,160	10.94	380	101,793	11.95	24,670
Dec.	38,417	9,930,710	11.54	1,821	523,997	12.85	36,596
1936:							
Jan.	32,255	8,624,060	11.94	732	229,129	13.98	31,523
Feb.	32,879	9,293,711	12.62	625	199,956	14.27	32,254
Mar.	34,911	10,271,085	13.13	1,172	390,551	14.88	33,739

* Revised.
Note: Total 1935 figures (revised) subject to further revision.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule Tons	Guayule Dollars	Balata Tons	Balata Dollars	Jelutong Tons	Jelutong Dollars	Liquid Latex (1) Tons	Liquid Latex (1) Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,659
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	——	——	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	——	——	708	147,403	4,607	616,596	5,085	601,999
1933	——	——	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1934	402	75,349	1,054	438,209	4,988	943,752	13,070	3,633,253
1935	468	86,835	626	188,384	5,747	1,063,126	13,553	3,782,222
1935:								
March	——	——	57	15,917	488	80,643	1,290	354,654
April	——	——	51	11,452	419	58,429	1,721	415,100
May	51	9,464	62	12,931	332	51,805	1,427	380,844
June	105	19,502	75	23,809	330	50,165	591	152,665
July	51	9,800	49	15,758	388	62,736	1,144	303,518
August	50	9,464	31	8,963	445	82,179	1,234	370,431
Sept.	18	3,245	29	6,090	1,682	407,418	1,048	291,652
Oct.	48	8,112	27	7,641	208	33,262	1,287	342,101
Nov.	70	11,931	39	11,706	269	50,657	1,023	261,668
Dec.	91	15,317	62	18,269	414	71,885	1,395	391,386
1936:								
Jan.	70	13,182	30	8,924	656	133,948	1,667	474,682
Feb.	75	14,127	100	34,389	396	84,635	1,459	406,985
Mar.	40	7,605	65	25,590	378	70,560	1,427	417,704

(1) Weight given in pounds of dry rubber contained in latex.
Note: Total 1935 figures (revised) subject to further revision.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)
(All Quantities in Long Tons)

	Figures on Monthly Basis: 1929	1930	1931	1932	1933	1934	1935	1936
Jan.	43,002	36,194	28,557	29,648	22,645*	39,190*	47,103	48,506
Feb.	41,594	33,302	28,797	31,821	21,392*	40,515*	43,187	36,746
Mar.	44,730	35,540	32,788	29,505	17,483*	47,003*	42,620	42,703
Apr.	47,521	39,686	33,321	27,518	25,928	44,853*	44,714	
May	49,233	39,386	37,817	30,957	44,074	42,918*	41,568	
June	43,227	34,195	37,916	41,475	50,743*	40,147*	36,623	
July	41,526	29,508	31,397	29,976	49,614*	32,553*	36,384	
Aug.	38,274	30,850	27,586	23,721	44,428*	33,216*	39,242	
Sept.	34,707	25,515	23,638	23,847	35,281*	30,258*	37,553	
Oct.	34,800	27,516	22,277	22,286	31,543*	31,253*	42,436	
Nov.	27,659	23,691	22,943	23,231	28,831*	34,748*	42,778	
Dec.	25,531	21,687	21,409	18,015	28,757*	36,569*	42,942	
Tot.	469,804	375,980	348,986	332,000	400,719*	453,223*	497,150	

* Revised.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1926	180,582	164,500	45.9	23,213	1931	133,351	124,126	33.9	19,257
1927	189,144	178,471	47.6	24,980	1932	75,608	77,504	23.4	16,354
1928	208,516	223,000	50.4	24,785	1933	99,560	81,602	19.9	20,746
1929	218,954	226,588	48.4	27,464	1934	110,010	100,597	22.2	23,079
1930	157,967	153,497	40.8	22,006	1935	122,948	112,712	22.7	25,069

	Figures on Monthly Basis: Production	Consumption Tons	Consumption % to Crude	Stocks*		Production	Consumption Tons	Consumption % to Crude	Stocks*
1935:									
Jan.	10,465	11,261	23.9	22,291	July	8,421	8,396	23.1	17,810
Feb.	10,072	9,374	23.3	22,989	Aug.	9,557	8,795	22.4	18,272
Mar.	10,549	9,741	22.9	20,637	Sept.	9,041	8,764	23.4	18,260
Apr.	10,315	10,466	23.4	18,716a	Oct.	11,926	9,662	22.8	19,640
May	10,223	9,938	23.9	18,541	Nov.	11,482	9,084	21.2	21,478
June	8,590	8,710	23.8	17,932	Dec.	12,307	8,521	19.8	25,069
1936:									
Jan.	11,665	10,039	20.7	26,145	July	.....	.....	...	.....
Feb.	10,188	7,366	20.1	28,267	Aug.	.....	.....	...	.....
Mar.	10,712	8,767	20.5	29,161	Sept.	.....	.....	...	.....
April	.....	.....	...	.....	Oct.	.....	.....	...	.....
May	.....	.....	...	.....	Nov.	.....	.....	...	.....
June	.....	.....	...	.....	Dec.	.....	.....	...	.....

* Stocks on hand at the end of month or year.
a Revised.

U. S. Consumption of Gasoline

(Bureau of Mines Statistics)
(In Thousands of Barrels of 42 Gallons)

	1934*	1935*	1936		1934*	1935*	1936
January	29,489	28,062	32,553	August	39,105	42,836	
February	25,310	26,432	27,401	September	34,669	37,862	
March	30,577	31,997	35,871	October	37,674	41,401	
April	32,736	36,082		November	34,998	35,956	
May	38,071	39,095		December	30,581	33,734	
June	36,430	37,890					
July	37,466	41,209		Total	407,106	432,556	

* Revised on basis of final annual figures issued by Bureau of Mines.

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,282	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	12,255,118
1927	19,700,003	1931	11,253,800	1935	18,664,356

1936:		1936:		1936:	
January	1,877,448	May	.....	September	.....
February	1,260,590	June	.....	October	.....
March	1,840,723	July	.....	November	.....
April	2,258,296	August	.....	December	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1934																																
January	———	9	8 1/8	9	9	———	———	8 3/4	8 3/4	8 3/4	8 3/4	8 3/4	8 7/8	8 7/8	9	9 1/8	8 3/4	9 1/8	9 1/8	9 3/4	———	9 1/2	9 1/2	9 3/4	9 1/8	10	10	10	10	———	9 3/16
February	10	9 7/8	9 1/8	———	10 1/16	10 5/8	———	10 3/4	10 3/4	10 1/8	———	———	10 1/2	10 7/8	10 3/4	———	———	———	10 1/2	10 3/8	10 3/8	———	10 3/4	10 3/8	———	———	———	———	———	———	———	10 1/2
March	10 7/8	10 1/2	10 3/4	11 1/2	10 3/4	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	12	11 3/8	11 3/8	11 3/8	11 3/8	12	11 7/8	12 3/8	12 1/8	12 1/2	12 3/8	11 7/8	12 1/8	10 7/8	10 7/8	11 1/8	———	11	11 3/16
April	———	11 3/4	11 3/8	11 3/4	11 3/4	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	12	12 1/8	12	12	12 1/8	12	13	12 3/8	12 1/8	12 1/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 1/4	12	12	———	12 3/16
May	———	14 1/8	14 1/8	15	15 1/8	15 1/2	15 1/2	15 1/4	14	13 3/4	13 3/8	13 3/8	13 1/8	12 7/8	13 1/8	13 1/8	13 1/8	13 1/8	13 1/8	13 1/8	13	13	12 3/4	12 3/8	12 3/8	12 3/8	12 3/8	12 1/8	12 1/4	13 3/8	13 3/8	13 1/2	13 1/4
June	———	13	12 3/4	———	———	———	———	13 3/4	14	13 3/8	13 3/8	13 3/8	13 3/8	13 1/2	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 1/2	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	14	14 1/8	14 1/8	14 1/8	14 5/8
July	———	14	14 3/8	———	14 3/4	14 5/8	14 5/8	14 3/8	14 3/8	14 3/4	14 3/4	14 5/8	14 5/8	14 3/8	15 1/8	15 1/8	14 7/8	14 3/4	14 7/8	14 5/8	14 5/8	14 3/4	14 3/8	14 5/8	15 3/4	15 3/4	14 3/4	14 3/4	14 1/4	14 1/4	14 1/4	14 1/4	14 5/8	14 5/8
August	———	14 1/8	14 5/8	15	15 1/8	15 1/8	15 1/8	15 3/4	15 3/4	15 3/4	15 1/8	15 1/8	15 1/8	15 1/8	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4
September	———	14 1/2	13 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4
October	———	14 1/2	13 3/4	14	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4
November	———	13 3/4	13	13	13	13	13	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4
December	———	13 3/8	12 7/8	13	13	13 1/8	13 1/8	13 1/8	———	12 1/8	12 7/8	12 1/8	12 7/8	12 1/8	13	13 1/8	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
1935																																
January	———	13 3/4	13 1/2	13 1/2	13 1/2	———	13 3/4	13 3/4	13 5/8	13 3/8	13 3/8	13 1/4	———	13 1/4	12 7/8	13 1/8	12 7/8	12 7/8	13 1/8	13	13	13	13	13	13	13	13	13	13	13	13	13	13
February	———	12 3/4	———	12 3/4	12 3/4	12 5/8	12 5/8	13 1/8	13 1/8	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
March	———	12 5/8	———	12 3/8	12 1/8	12	12 1/8	12	12	11 3/4	11 3/4	11 3/4	11 3/8	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
April	———	11 3/8	11 1/4	11 1/2	11	———	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2
May	———	11 3/8	11 1/4	11 1/2	11 1/2	11 1/2	11 1/2	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8
June	———	12 1/8	12 1/4	———	12 1/2	12 1/2	12 1/2	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8	12 3/8
July	———	12 1/8	12 1/4	———	12 1/4	12 1/4	12 1/4	12 1/8	12	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8	12 1/8
August	———	11 3/4	11 3/4	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8
September	———	11 3/4	11 7/8	12	12	12	12	12	12	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8
October	———	11 3/4	11 7/8	12	12 1/8	12 1/8	12 1/8	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
November	———	11 3/4	11 7/8	12	12	12	12	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
December	———	11 3/4	11 7/8	12	12	12	12	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
1936																																
January	———	13 1/2	13 3/4	13 3/8	13 3/8	———	13 3/4	13 1/8	13 1/8	13 7/8	———	———	14 1/8	———	———	———	———	———	———	———	———	14 3/8	14 1/8	15	———	———	———	———	14 1/8	14 1/8	14 1/2
February	———	15 5/8	15 7/8	15 7/8	15 7/8	15 7/8	15 7/8	15 7/8	15 7/8	———	15 7/8	15 7/8	15 1/8	15 5/8	15 7/8	16	16 1/8	16 1/8	16	16	16	16	16 1/8	15 7/8	15 7/8	15 7/8	15 7/8	15 5/8	15 5/8	15 5/8	15 5/8	15 7/8
March	———	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8
April	———	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8
May	———	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8	15 1/8

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1930

	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	15.24	8.34	4.38	3.08	9.32	13.10	14.35
Feb.	15.85	7.70	4.03	2.95	10.45	12.92	15.48
Mar.	15.34	7.71	3.35	3.01	11.01	11.51	15.89
Apr.	14.93	6.43	3.02	3.56	12.10	11.55	15.98
May	14.24	6.49	3.09	4.95	13.26	12.05	
June	12.45	6.35	2.66	6.15	13.51	12.57	
July	11.24	6.37	2.89	8.01	14.60	12.10	
Aug.	9.96	5.38	3.63	7.31	15.47	11.98	
Sept.	8.28	5.08	3.84	7.30	15.36	11.55	
Oct.	8.20	4.87	3.65	7.64	13.96	12.62	
Nov.	9.01	4.65	3.44	8.66	13.04	13.15	
Dec.	9.05	4.64	3.24	8.87	12.98	13.28	
Average for Year	11.98	6.17	3.49	5.96	12.92	12.37	

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	1936 Feb.	1936 Mar.	1936 Apr.	1936 May	Day	1936 Feb.	1936 Mar.	1936 Apr.	1936 May
1	6 11/16	———	7 3/16	7 7/16	17	7 7/16	7 7/16	7 7/16	
2	———	7 3/16	7 1/16	7 1/2	18	7 7/16	7 7/16	———	
3	7	7 3/8	7 1/2	———	19	7 7/16	7 7/16	7 3/8	
4	7	7 3/8	7 1/2	7 3/8	20	7 7/16	7 7/16	7 3/8	
5	7	7 7/16	———	7 3/8	21	7 3/8	———	7 7/16	
6	7 1/8	7 1/2	7 1/2	7 3/8	22	7 3/8	7 1/2	7 1/2	
7	7 1/16	7 1/2	7 1/2	7 1/4	23	———	7 1/2	7 7/16	
8	7 1/4	———	7 7/16	7 1/4	24	7 3/16	7 1/2	7 1/2	
9	———	7 7/16	7 7/16	7 1/4	25	7 3/8	7 7/16	7 7/16	
10	7 7/16	7 1/2	———	———	26	7 1/4	7 7/16	———	
11	7 7/16	7 11/16	———	———	27	7 3/8	7 7/16	7 1/2	
12	7 7/16	7 7/16	———	———	28	7 3/8	7 7/16	7 3/16	
13	7 3/8	7 3/8	———	———	29	7 3/8	———	7 1/2	
14	7 3/8	7 7/16	7 5/16	———	30	———	7 7/16	7 7/16	
15	7 3/8	———	7 3/16	———	31	———	7 7/16	———	
16	———	7 7/16	7 3/8	———					

Average Monthly Price Per Pound

Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence	Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence
Jan.	2.264	4.429	6.434	6.758	Aug.	3.811	7.401	5.696	
Feb.	2.093	4.920	6.292	7.255	Sept.	3.728	7.409	5.508	
Mar.	2.099	5.136	5.745	7.450	Oct.	3.957	6.806	6.130	
Apr.	2.323	5.712	5.604	7.502	Nov.	4.096	6.294	6.308	
May	2.966	6.207	5.822		Dec.	4.200	6.295	6.340	
June	3.392	6.245	6.027		Average for Year	3.233	6.159	5.976	
July	3.860	7.053	5.801						

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	1936 Mar.	1936 Apr.	1936 May	Date	1936 Mar.	1936 Apr.	1936 May	Date	1936 Mar.	1936 Apr.	1936 May
1	———	11.56	11.61	11	11.41	11.69		22	———	11.85	
2	11.28	11.69	11.61	12	11.46	———		23	11.47	11.88	
3	11.23	11.62	———	13	11.38	11.75		24	11.48	11.80	
4	11.20	11.60	11.62	14	11.36	11.74		25	11.47	11.83	
5	11.24	———	11.62	15	———	11.72		26	11.51	———	
6	11.30	11.56	11.63	16	11.41	11.73		27	11.64	11.77	
7	11.32	11.64	11.65	17	11.43	11.74		28	11.70	11.69	
8	———	11.70	11.67	18	11.41	11.81		29	———	11.60	
9	11.32	11.69	11.65	19	11.44	———		30	11.69	11.55	
10	11.35	———	———	20	11.43	11.77		31	11.72	———	
				21	11.46	11.79					

Average Monthly Price Per Pound

	1933 Cents	1934 Cents	1935 Cents	1936 Cents		1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	6.23	11.25	12.70	11.91	Aug.	9.55	13.40	11.48	
Feb.	6.05	12.28	12 58	11.53	Sept.	9.64	13.00	10.80	
Mar.	6.39	12.30	11.63	11.43	Oct.	9.58	12.48	11.28	
Apr.	7.02	11.80	11.73	11.71	Nov.	10.04	12.53	12.01	
May	8.64	11.44	12.25		Dec.	10.17	12.76	11.99	
June	9.47	12.20	11.89		Average for Year	8.63	12.36	11.88	
July	10.76	12.84	12.26						

World Stocks of Crude Rubber

(All figures are in long tons)

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1934	ON HAND 1935	ON HAND 1936	AFLOAT 1934	AFLOAT 1935	AFLOAT 1936	ON HAND AND AFLOAT 1934	ON HAND AND AFLOAT 1935	ON HAND AND AFLOAT 1936
Jan.	368,660	348,931*	276,372	45,768	42,066	43,870	414,428	390,997*	320,242
Feb.	358,681*	339,335*	273,284	53,063	42,969	46,532	411,744*	382,304	319,816
Mar.	352,897*	338,700	267,519	54,722	44,485	58,935	407,619*	383,185	326,454
Apr.	351,073*	334,954		56,251	37,651		407,324*	372,605	
May	350,935*	319,281		57,921	44,375		409,250	363,656	
June	358,461*	320,470		46,698	55,581		404,847	376,051	
July	365,072	330,528		45,869	49,018		410,941	379,546	
Aug.	363,711*	329,548		40,278	47,724		403,989*	377,272	
Sept.	360,623*	326,236		38,831	43,413		399,454	369,649	
Oct.	362,571*	317,850		38,247	49,913		400,818*	367,763	
Nov.	362,826*	303,162		38,625	46,588		401,451*	349,750	
Dec.	355,000*	295,438		47,644	39,094		402,644*	334,532	

(Rubber Manufacturers' Association figures raised to 100%)

* Revised.

STOCKS IN GREAT BRITAIN

(No. of Tons in Wharves and Warehouses, not including Latex)

At end of	London 1934	London 1935	London 1936	Liverpool 1934	Liverpool 1935	Liverpool 1936
January	38,570	81,807	84,791	51,702	66,405	77,188
February	38,752	87,605	79,757	52,730	67,983	77,138
March	40,501	92,664	74,779	53,813	69,218	72,823
April	42,413	94,361		53,695	70,584	
May	42,190	95,722		54,007	71,927	
June	45,674	98,077		54,028	73,131	
July	50,490	99,226		55,414	74,915	
August	48,953	101,574		56,246	75,584	
September	56,103	101,198		56,848	76,263	
October	63,079	94,749		57,818	76,400	
November	67,656	90,542		60,106	76,301	
December	72,285	86,551		62,505	77,589	

(Figures from the Rubber Trade Association of London)

STOCKS IN OTHER CENTRES

(Figures from Statistical Bulletin of the Int'l Rubber Regulation Committee)

At end of 1935	Penang and Singapore [1]	Malaya [2]	Ceylon [3]	Holland	Para and Manaos
April	48,827	37,896	4,611	1,536	4,626
May	54,740	36,605	4,647	1,499	4,222
June	51,770	38,209	4,271	1,481	4,036
July	49,958	39,140	4,700	1,448	4,441
August	46,482	34,541	4,866	1,455	4,571
September	33,872	33,489	4,403	1,442	4,673
October	37,597	34,271	3,790	1,440	4,346
November	32,597	34,197	4,393	1,550	4,062
December	28,304	33,899*	4,794	1,553	4,683
At end of 1936					
January	31,195	35,423	4,504*	1,568	4,496
February	38,421	34,109	4,475	1,532	6,199

[1] Dealers' and Port Stocks. [2] Inside Regulated Areas. [3] Dealers' Stocks Only.
* Revised.

RUBBER STOCKS AFLOAT

End of: 1935	Afloat for United States	Afloat for Europe	All Other * Afloat	Total * Afloat
March	44,485	30,400	17,115	92,000
April	37,651	31,400	29,949	99,000
May	44,375	30,300	29,325	104,000
June	55,581	27,485	17,934	101,000
July	49,018	29,150	17,832	96,000
August	47,724	32,800	21,476	102,000
September	43,413	31,090	26,497	101,000
October	49,913	29,000	20,087	99,000
November	46,588	26,250	16,162	89,000
December	39,094	25,200	18,706	83,000
End of 1936:				
January	43,870	20,160	19,970	84,000
February	46,532	20,000 P	18,468	85,000
March	58,935	18,000	11,065	88,000

* *Total Afloat* is an arbitrary estimate based on 1⅓ months' shipments as adopted by the Department of Commerce. *All Other Afloat* is determined by subtracting the amount of stocks in transit to the United States and Europe from the estimated total.
P—Preliminary estimate

TOTAL WORLD STOCKS

At end of	1931	1932	1933	1934	1935	1936
January	510,296	638,416	634,797	661,948	698,153	582,000
February	516,123	626,819	626,227	663,308	686,195	584,000
March	532,080	629,894	638,428	666,382	678,809	
April	531,832	630,803	629,159	658,796	677,006	
May	528,855	627,474	626,537	689,239	677,569	
June	533,021	595,712	613,055	672,804	671,525	
July	548,794	589,037	618,258	676,200	679,061	
August	555,931	597,274	617,449	674,702	680,644	
September	561,838	599,986	623,683	694,361	661,509	
October	588,873	609,368	636,597	680,616	655,000	
November	605,684	614,342	642,968	684,408	623,300	
December	628,826	629,898	654,890	705,975	597,149	
Monthly Average	553,513	615,752	630,171	677,395	665,493	

(Figures from the Survey of Current Business)

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	77,944	68,726	50,965	48,739	40,085	45,304	47,233	49,362
Shipments	74,296	69,395	53,638	48,151	40,260	44,094	46,687	50,357
Inventory [2]	13,624	11,838	9,003	7,775	7,644	8,888	9,455	8,196

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,922	4,626	4,579	3,222	3,663	3,875	9,684	10,398	8,918
Feb.	4,335	4,383	3,577	3,285	3,287	3,211	10,725	11,530	9,265
Mar.	5,180	4,346	3,638	4,223	4,204	3,856	11,651	11,675	9,087
Apr.	4,470	4,512		4,438	5,144		11,981	11,003	
May	4,456	4,175		5,332	4,067		11,127	11,131	
June	4,342	3,910		5,228	4,262		10,219	10,755	
July	3,353	3,532		4,157	5,447		9,437	8,850	
Aug.	3,533	3,993		4,308	4,739		8,697	7,805	
Sept.	2,936	3,787		3,183	3,303		8,419	8,288	
Oct.	3,287	4,051		3,010	4,095		8,657	8,291	
Nov.	3,341	3,997		3,191	3,990		8,779	8,249	
Dec.	3,778	4,051		3,109	4,154		9,455	8,196	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	80,180	68,829	52,420	48,333	36,891	42,546	46,228	47,879
Shipments	77,127	70,592	54,938	50,021	37,911	41,391	45,046	48,241
Inventory [2]	16,117	12,807	9,999	7,922	6,749	7,815	9,180	8,231

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,530	4,259	4,734	3,199	3,722	4,297	8,403	9,621	8,889
Feb.	4,077	4,171	3,666	3,323	3,362	3,552	8,445	10,466	8,968
Mar.	5,194	4,123	3,904	4,118	4,168	3,913	10,244	10,406	8,960
Apr.	4,735	4,259		4,342	4,453		10,585	10,170	
May	4,359	3,892		4,902	3,451		10,043	10,615	
June	4,097	3,480		5,309	4,024		8,795	10,050	
July	3,531	3,251		4,323	5,269		8,053	8,005	
Aug.	3,680	3,894		4,198	4,556		7,555	6,939	
Sept.	3,110	4,125		3,024	3,426		7,639	7,565	
Oct.	3,219	4,435		2,689	4,110*		8,151	8,053	
Nov.	3,169	3,942		2,767	3,801*		8,503	8,161	
Dec.	3,503	4,048		2,850	4,084*		9,180	8,231	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.
(2) Held by manufacturers at end of period indicated.
(*) Revised.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,126
1934*	2,753,111	2,177,919	575,192	116,852	92,647	24,205	2,869,963
1935	4,009,496	3,285,836	723,660	172,995	139,742	33,253	4,182,491
1935 [1]							
March	429,793	361,816	67,977	21,975	18,179	3,796	451,768
April	477,691	401,628	76,063	24,121	20,686	3,435	501,812
May	364,662	307,522	57,140	20,765	17,093	3,672	385,427
June	361,248	296,609	64,639	15,745	12,276	3,469	376,993
July	336,985	276,084	60,901	13,069	9,471	3,598	350,054
Aug.	239,994	182,389	57,605	7,692	5,524	2,168	247,686
Sept.	89,804	57,285	32,519	5,323	3,819	1,504	95,127
Oct.	275,024	214,609	60,415	8,313	7,128	1,185	283,337
Nov.	398,039	338,425	59,614	13,496	12,042	1,454	411,535
Dec.	407,804	344,613	63,191	13,775	11,370	2,405	421,579
1936							
Jan.	367,252	299,936	67,326	13,302	11,261	2,041	380,554
Feb.	290,964	226,452	64,512	13,268	10,853	2,415	304,232
March	424,571	345,167	79,404	17,974	14,488	3,486	442,545

* Revised.
[1] Figures for the complete period of 1935 were revised by the Bureau of the Census, Department of Commerce, on January 24, 1936.

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA [1]							DUTCH EAST INDIES [6]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [5]	Siam [6]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [3]	Amazon Valley	All Other [6]	World Total [7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1933	573,412	167,377	406,035	63,351	4,527	10,874	7,555	7,765	73,851	91,861	149,659	18,394	9,883	2,737	846,312
1934	677,361	211,803	465,558	79,746	10,492	17,233	11,103	17,545	87,400	112,058	175,470	20,170	8,903	2,985	1,008,663
1935	590,522	176,705	413,817	53,584	13,134	20,850	8,868	28,051	57,479	78,362	135,247	29,949	11,125	5,055	856,245
1934:															
Feb.	57,867	15,027	42,840	8,620	775	1,005	805	1,264	6,706	9,211	13,696	1,232	831	105	87,090
March	58,515	19,907	38,608	6,750	1,412	1,360	806	1,363	8,655	10,539	19,084	1,968	846	113	91,504
April	56,748	20,957	35,791	5,157	762	1,447	894	1,311	7,282	9,808	19,250	1,330	440	236	83,708
May	69,403	25,691	43,712	8,870	1,106	1,892	1,397	997	12,104	14,606	26,598	1,243	726	328	113,579
June	53,282	20,981	32,301	5,397	1,425	1,886	644	1,497	4,860	6,192	15,956	1,593	765	377	72,893
July	53,335	22,829	30,506	3,818	710	1,662	1,048	2,399	5,762	7,369	14,415	1,703	353	252	69,997
Aug.	52,641	17,865	34,776	4,948	552	1,714	1,048	1,908	5,340	8,901	11,356	1,610	710	251	73,114
Sept.	61,051	17,889	43,162	6,555	294	1,438	839	1,626	5,722	10,738	14,688	1,665	764	222	87,713
Oct.	47,045	10,226	36,819	6,544	413	1,412	1,196	1,328	5,970	6,643	5,556	1,413	840	401	68,535
Nov.	51,140	8,759	42,381	6,756	501	953	941	1,356	7,621	7,123	5,338	2,356	1,017	334	76,676
Dec.	59,575	15,375	44,200	8,481	990	1,237	680	2,043	10,865	12,953	12,354	2,956	1,035	239	98,033
1935															
Jan.	56,720	17,142	39,578	5,202	2,269	1,630	1,222	2,614	3,812	5,371	8,704	2,650	1,196	460	74,719
Feb.	50,593	17,676	32,917	5,556	731	1,887	760	2,288	4,395	7,663	15,194	2,076	636	254	74,154
Mar.	47,407	13,437	33,970	3,181	701	1,901	773	2,076	5,592	7,950	7,973	1,472	740	526	66,855
Apr.	53,360	16,029	37,331	2,976	370	1,895	846	1,661	5,574	6,873	12,683	2,827	963	185	74,957
May	51,353	23,720	27,633	4,223	674	2,323	848	2,752	6,217	7,931	21,058	2,138	832	315	76,920
June	49,751	18,637	31,114	3,525	1,077	2,031	603	2,869	5,698	8,258	14,168	2,021	659	393	72,416
July	48,975	11,257	37,718	4,106	580	1,870	1,164	1,939	5,899	5,664	8,373	2,015	427	407	70,162
Aug.	51,873	10,978	40,895	5,683	724	759	566	2,062	4,661	6,923	8,875	2,451	1,150	442	74,541
Sept.	51,247	10,418	40,829	3,970	681	1,797	421	2,278	4,089	5,862	9,422	2,248	1,017	493	73,107
Oct.	48,258	19,364	28,894	5,932	1,198	2,168	1,040	2,622	3,937	6,698	16,432	2,748	1,240	462	73,371
Nov.	43,147	10,518	32,629	4,288	1,806	1,356	455	2,155	3,724	3,963	8,511	2,392	936	587	62,802
Dec.	37,838	7,529	30,309	4,942	2,323	1,233	171	2,735	3,881	5,206	3,854	4,911	1,329	531	61,425
1936:															
Jan.	39,101	12,582	26,519	4,131	1,006	2,385	938	1,665	4,315	6,347	9,270	2,449	1,756	500	61,281
Feb.	38,436	18,857	19,579	3,664	1,280	2,111	529	3,663	4,789	6,643	15,479	2,892	1,157	500	62,329
Mar.	46,552	12,026	34,526	4,336	1,306	1,848	342	2,966	4,484	5,052	8,949	2,550	1,135	500	67,994

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. * Figure is provisional: final figure will be shown when available.

NOTE: THE FIGURES FOR 1933 ARE REVISED AS OF JANUARY 25, 1935 AND REPRESENT FINAL FIGURES

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	36,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	772,803
1934	439,172	158,482	49,560	59,330	28,439	69,905	21,398	47,271	9,642	9,115	3,758	12,418	6,900	10,999	926,389
1935	455,758	128,829	51,450	62,899	26,870	57,567	21,880		9,978	7,593	4,068	11,878	8,140	11,245	
1934:															
Aug.	31,405	13,728	3,660	3,078	1,948	4,945	1,795	6,829	658	669	239	1,033	277	1,495	71,759
Sept.	30,345	11,254	4,244	2,607	2,770	7,346	1,486	4,487	743	501	339	980	465	477	68,044
Oct.	27,323	18,897	3,424	2,148	3,043	7,227	1,296	3,681	798	693	447	813	675	254	70,719
Nov.	35,982	15,875	3,176	3,425	1,568	5,580	1,764	4,488	516	379	187	1,382	542	215	75,079
Dec.	17,305	15,816	3,605	5,207	2,849	3,904	1,979	6,460	1,312	—168	139	1,143	615	762	60,928
1935															
Jan.	39,546	20,383	5,573	4,286	2,670	4,400	1,613	3,446	1,099	419	158	1,252	468	1,245	86,558
Feb.	45,999	15,609	4,593	3,513	1,558	5,582	4,356	1,810	848	399	477	838	567	1,836	87,985
Mar.	44,772	12,810	4,017	6,353	2,710	4,421	1,582	4,624	1,459	240	331	891	630	741	85,581
Apr.	40,061	11,574	3,306	5,820	1,063	6,635	1,653	3,387	1,150	520	329	1,049	432	789	78,115
May	29,962	12,498	3,828	6,049	3,929	5,429	935	1,937	671	982	272	853	815	774	68,934
June	31,410	10,253	3,210	4,551	1,435	3,373	1,831	3,087	496	1,065	446	780	745	604	66,286
July	47,694	9,454	3,247	4,929	1,319	4,484	1,298	1,823	520	572	157	800	548	185	77,030
Aug.	41,057	14,120	4,508	4,790	2,814	4,453	916	1,227	655	528	413	820	752	673	77,726
Sept.	35,256	11,223	3,740	5,453	1,604	3,590	1,696	1,593	449	806	282	1,030	793	914	68,429
Oct.	35,770	3,184	5,175	6,074	812	4,727	2,500*	4,876	829	539	671	1,000	597	742	67,496
Nov.	25,756	2,942	4,731	6,258	4,389	4,361	2,000*	4,858	783	449	245	1,206	1,044	1,276	60,298
Dec.	38,072	4,779	5,522	4,823	2,567	6,112	2,500*		1,019	1,074	287	1,359	750	1,466	
1936:															
Jan.	33,260	4,573	6,755	5,545	1,759	4,355	2,500*	467	1,260	760	369	736	664	767	63,770
Feb.	33,789	1,271	6,264	5,257	1,900	2,786			735	799	106	497		344	
Mar.	33,743	—1,227	4,333								339				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemicals and Compounding Materials —

ACCELERATORS—
Ureka C—Ureka Blend B—Ureka.—A-1, A-7, A-11, A-16, A-19, A-32, Z-88, A-510, DPG
ANTIOXIDANTS — Flectol A, Oxynone
MONSANTO CHEMICAL CO.
Rubber Service Laboratories Div.
1012 Second National Bldg., Akron, Ohio

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 25 years.*
The Aluminum Flake Co.
Akron, Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

ASBESTINE—Specially prepared for use in Rubber. Send for liberal working samples.
SOLE PRODUCERS
International Pulp Co.
41 Park Row New York City

CADMIUM REDS
In 6 Shades . . Deep Orange to Extra Dark Red
LITHOPONES
Standard and Titanated
United Color and Pigment Co., Inc.
Newark, New Jersey
Branches in Principal Cities

CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
The Columbia Alkali Corporation
BARBERTON, OHIO

CARBON BLACK—*Micronex*
the world's standard gas black, universally known as the "King of Rubber Pigments."
Binney & Smith Co.
41 East 42nd St. New York City

IN this section are listed the products of the leading producers of materials and equipment used by rubber manufacturers.

When buyers refer to these pages for their needs, your name and address and a description of your products should be available here. The cost of a one-inch listing is only $5.00 per issue—the lowest cost of advertising space available in the rubber field.

THE RUBBER AGE
250 West 57th St., New York

CABOT CERTIFIED CARBON BLACK
"Spheron"
Godfrey L. Cabot, Inc.
77 Franklin St. Boston, Mass.

CARBON BLACK—*Aerfloted*
Arrow Black for rubber compounding. Standard for grit-free uniformity.
J. M. Huber, Inc.
460 West 34th St. New York

CARBON BLACK
SUPREME—*the up-to-date standard for rubber*
Imperial Oil & Gas Products Co.
Union Bank Bldg., Pittsburgh, Pa.

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world
UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CARBON BLACK
DISPERSO . . . *the specially developed Carbon Black that gives* BETTER DISPERSION.
WISHNICK-TUMPEER, INC.
295 Madison Ave., New York

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street, New York City

CHEMICALS
Carbon Black—Clay
Accelerators—Sulphur
Stocks Carried At All Times
Ernest Jacoby & Co.
79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

CHEMICALS

For Rubber	For Industry Generally	
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

NAUGATUCK CHEMICAL
Div. of U. S. Rubber Products, Inc.
1790 BROADWAY NEW YORK

CHEMICALS and compounding ingredients; Clay, Accelerators, Mineral Rubber.
R. T. Vanderbilt Co.
230 Park Ave. New York City

CHEMICALS and Mineral
Ingredients—Whiting, Clay, Talc, Barytes, Colors, Heavy Calcined Magnesia, Carbonate of Magnesia, Pumice Stone.
Standard Since 1899
Whittaker, Clark & Daniels, Inc.
260 West Broadway New York

COLLOIDAL SULPHUR
COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
HEVEATEX CORPORATION
78 Goodyear Ave., Melrose, Mass.
Offices in New York, Akron, Chicago

COLORS—*for Rubber*
Fine organic colors—Reds, Blues, Oranges, Violets, Greens—or any shade to meet your requirements—also Rubber Dispersed Colors
Ansbacher-Siegle Corporation
Rosenbank, Staten Island, N. Y.
820 So. Clinton St., Chicago, Ill.
Agents in Principal Cities

THE MARKET PLACE Section Continued on Next Page